

AUG 12 1938



MOTOR AGE

CHILTON PUBLICATION

VOTED TO THE INTERESTS OF THE INDEPENDENT REPAIR SHOP

AUGUST
1938

IN THIS ISSUE



Jobbers and Independents

Read what four authorities have to say about the jobber-repair shop relationship.

Jobber Directory

A convenient reference list of all jobber members of the National Standard Parts Association, Motor Equipment Wholesalers' Association and the National Automotive Parts Association.

Servicing Chandler-Groves Carburetors

Another picture story giving full details on the method of disassembling and assembling these units.

The Big 4 of Starterator Service

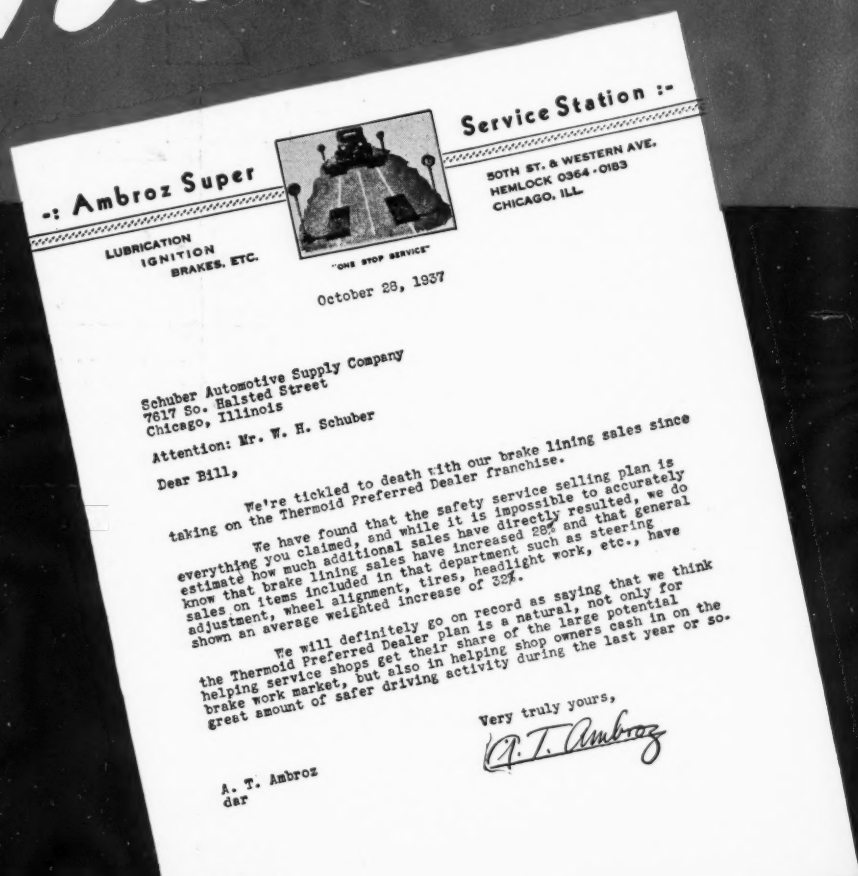
Full of pointers to help you with your next job on this Chevrolet unit.

"It's a Natural"

So says A. T. Ambroz, of Chicago, Ill., in the letter giving his experience with the Thermoid Preferred Dealer Plan. It will pay you to read his letter carefully. He says everything about the Thermoid Preferred Dealer Plan that we want you to know. And he says it with facts and figures. Just check his letter against these four objectives of the Thermoid Preferred Dealer Plan.

1. To bring the car owner into the shop for service.
2. To help sell a profitable job.
3. To help do the job well.
4. To bring the customer back for related "Safety Service" work.

When you've checked, make up your mind to learn all about the Thermoid Preferred Dealer Plan right away. It will mean more sales, greater profit on every job, and more jobs. Write today for full details.



Thermoid
Custom-Built
BRAKE LINING SETS



THERMOID CO., TRENTON, N. J., U. S. A. ★ In Canada, THERMOID LTD., TORONTO

WINNING

profit for "Zerone" dealers

PRE-TESTING THE PRODUCT. Here are two of the Du Pont fleet of over 100 experimental cars which covered more than 300,000 "laboratory test miles" last winter. Grueling tests showed that "Zerone": (1) is economical to use, (2) protects at temperatures lower than you'll ever encounter, (3) is not lost from the cooling system any faster than the water with which it is mixed, (4) prevents rust, (5) actually improves engine performance, and (6) can be put in a cooling system early in the season—it's not necessary to wait for cold weather before you can sell this anti-freeze to your customers.

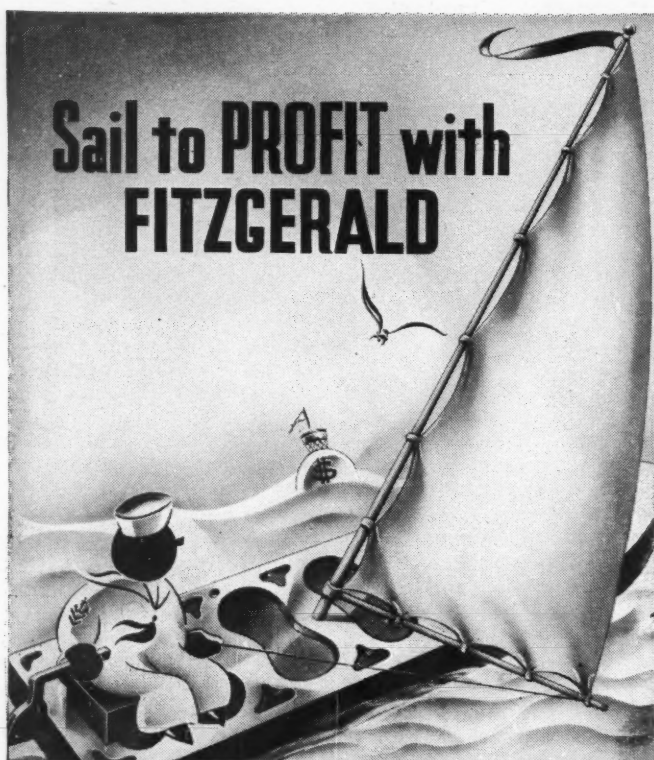


PRE-TESTED POPULARITY. Interviews like these were conducted by impartial and accredited organizations all over the country. One of the questions asked was simply, "What anti-freeze are you using?" The replies show that "Zerone" has the greatest public acceptance of any \$1 anti-freeze on the market!

PRE-TESTED ADVERTISING. Over a period of months, we tested various anti-freeze advertising appeals and illustrative ideas in the newspapers of several cities. Here you see an advertising expert studying the relative effectiveness of various "Zerone" headlines and layout combinations. We're basing the 1938 campaign, of course, on the winner. You can count on such pre-tested advertising to help you go places with "Zerone" this season!



for PRE-TESTED PROFIT



It's smooth sailing, too—for Fitzgerald offers everything you need to reach the port of profitable gasket business.

It will pay you to modernize your stock through Fitzgerald's **COMPLETE** gasket service—gaskets, oil and grease retainers for all installations—passenger cars, trucks, buses, tractors. Fitzgerald also offers display and merchandising helps to bring you more gasket business. Your jobber will give you prompt service . . . The Fitzgerald Manufacturing Company, Torrington, Conn.—Branches, Chicago and Los Angeles—New York Office—Canadian Fitzgerald, Limited, Toronto.



MOTOR AGE

DEVOTED TO THE INTERESTS OF THE INDEPENDENT REPAIR SHOP

Subscriptions for Motor Age are accepted only from independent repair shops and their employees.

Vol. LVII, No. 9

August, 1938

JULIAN CHASE, Directing Editor

W. K. TOBOLDT, Editor

J. BIRCH POLLOCK, Managing Editor ROBERT HANKINSON, Technical Editor

GEOFFREY GRIER, Art Editor B. M. IKERT, Contributing Editor

J. A. LAANSMA, Merchandising Editor JOS. GESCHELIN, Detroit Technical Editor

MARCUS AINSWORTH, Specifications Editor

In This Issue

Servicing the Chandler - Groves Carburetor. <i>By Bob Turner</i>	10
Balanced Power Requires Perfect Plugs. <i>By Bill Toboldt</i>	12
Factory Service Hints	14
Jobbers and Independents Pulling Together for Profits	15
Jobber Directory	20
The Big 4 of Starterator Service. <i>By Bob Hankinson</i>	23
Flat Rate Prices on 1938 Oldsmobile	24
The Readers' Clearing House	25
News and New Products	28
Mechanical Specifications	40
Tune-Up Specifications	41
Advertisers' Index	63

Copyright 1938 by Chilton Company (Inc.)

C. A. MUSSELMAN, Pres. and Gen. Mgr.; J. S. HILDRETH, Vice-Pres. and Manager Automotive Division; G. C. BUZBY, Vice-Pres.

Offices: Philadelphia, Phone Sherwood 1424. New York City, 239 W. 39th Street, Phone Pennsylvania 6-1100; Chicago, Room 516, London Guarantees & Accident Bldg., Phone Franklin 9494; Detroit, 1015 Stephenson Bldg., Phone Madison 2090; Cleveland, 609 Guardian Bldg., Phone Main 6860; Washington, D. C., 1061 National Press Bldg., Phone District 6877; San Francisco, 444 Market Street, Room 395, Phone Garfield 6788; Long Beach, Calif., 1595 Pacific Ave., Phone Long Beach 618-238. Subscription Price: United States and Possessions, Postal Union Countries, \$2.00 per year; Canada and foreign, \$3.00 per year. Single copies, 25c.

Owned and Published by



CHILTON COMPANY
(Incorporated)

Executive Offices

Chestnut and 56th Streets, Philadelphia, U. S. A.

Officers and Directors

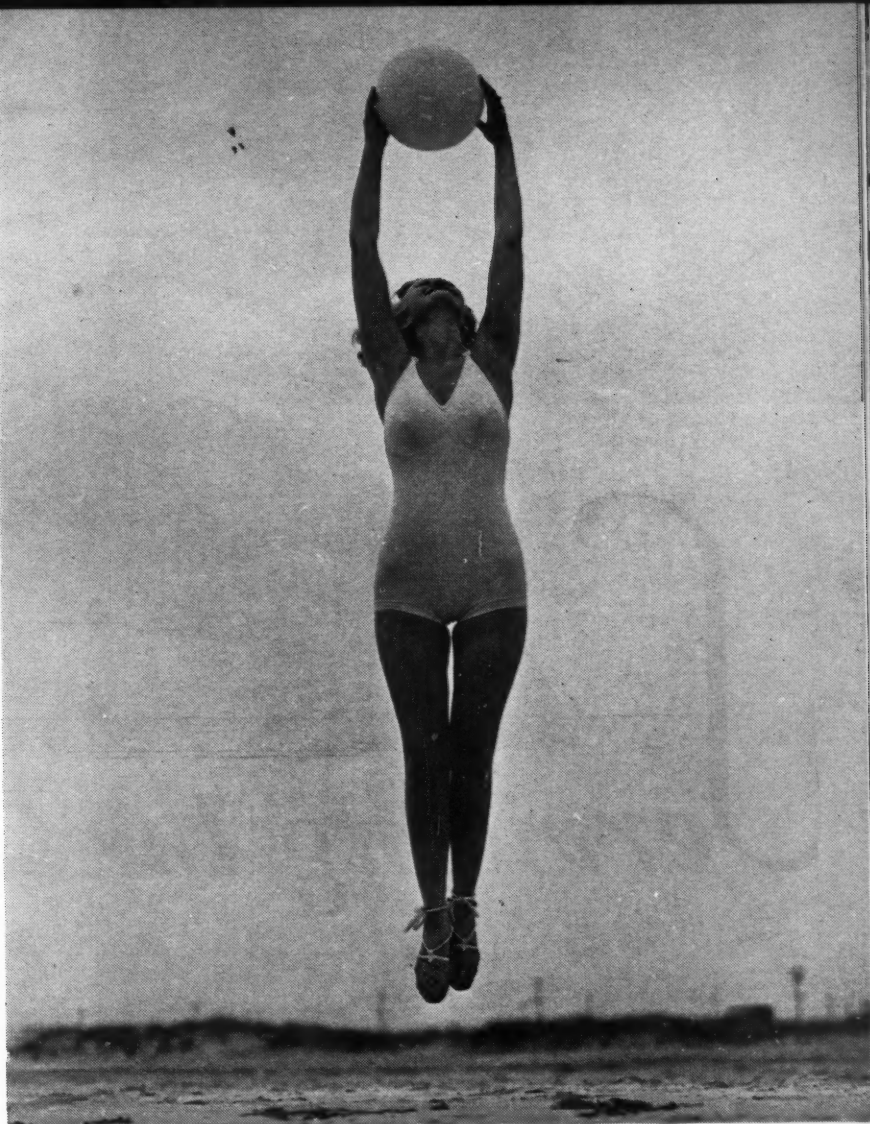
C. A. MUSSELMAN, President

FRITZ J. FRANK, Executive Vice-President

FREDERIC C. STEVENS, JOSEPH S. HILDRETH, GEORGE H. GRIF-FITHS, EVERIT B. TERHUNE, Vice-Presidents; WILLIAM A. BARBER, Treasurer; JOHN BLAIR MOFFETT, Secretary; JOHN H. VAN DE-VENTER, JULIAN CHASE, THOMAS L. KANE, CHARLES S. BAUR, G. CARROLL BUZBY, P. M. FAHRENDORF.

MOTOR AGE

AUGUST 1938



Jumping

Independent repair shop owners and managers who are on the jump for higher profits will find the article starting on page 15 of this issue of considerable interest.

Performance

Well, the interest in the article, "Performance Requires Perfect Timing," which appeared in the March issue of MOTOR AGE, seems to be gradually subsiding as we received only one letter during the past month which mentioned it. But that is rather an understatement, as Tom Gluck of Hollywood, Cal., used four pages of typing to tell me just how swell he thought the article was. Tom's letter appears in the Clearing House. Mighty glad to have Tom on my side. The odds are certainly against our friend W. C. Condit. Well, it made a great argument. I'll have to get busy and see if I can't figure out another article that will stir up an equal amount of interest.

MOTOR AGE, August, 1938

SHOP TALK

Carburetors

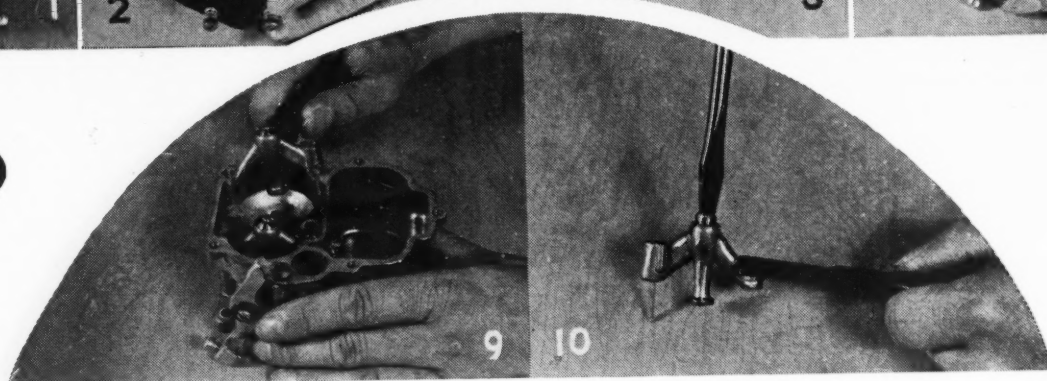
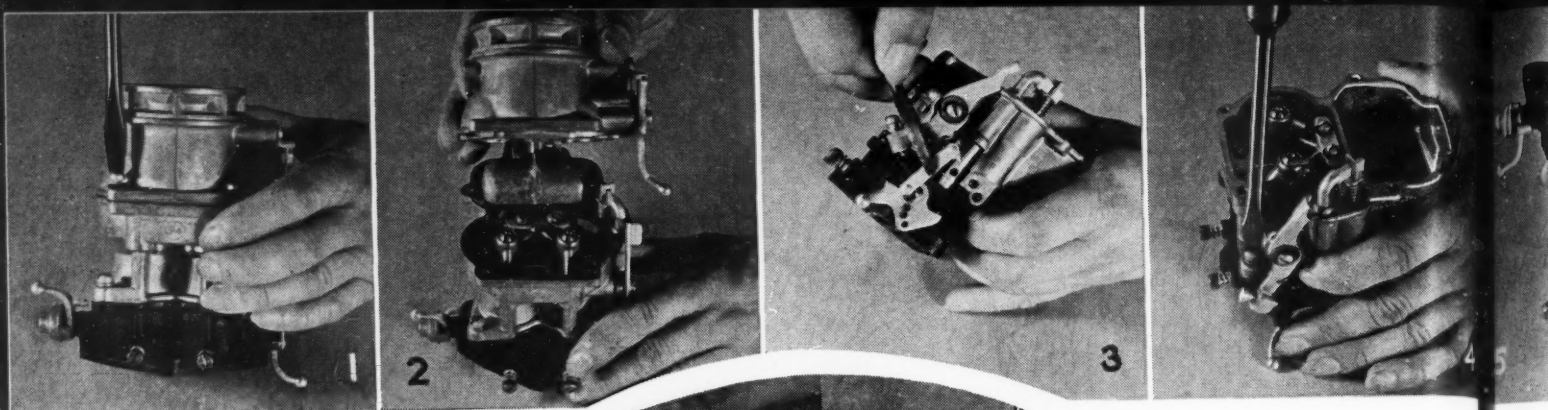
Speaking of articles, I hope you like the article on servicing the Stromberg carburetor which appeared in July and also the one on the Chandler Groves which appears in this issue. Personally, I think such articles are among the best that have appeared in MOTOR AGE. They certainly take the mystery out of carburetor service.

Hit

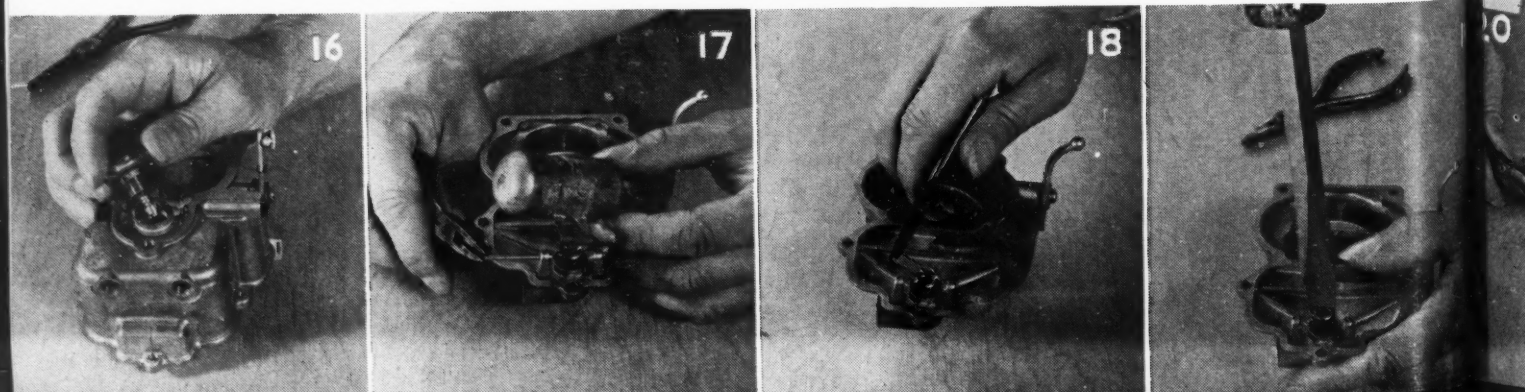
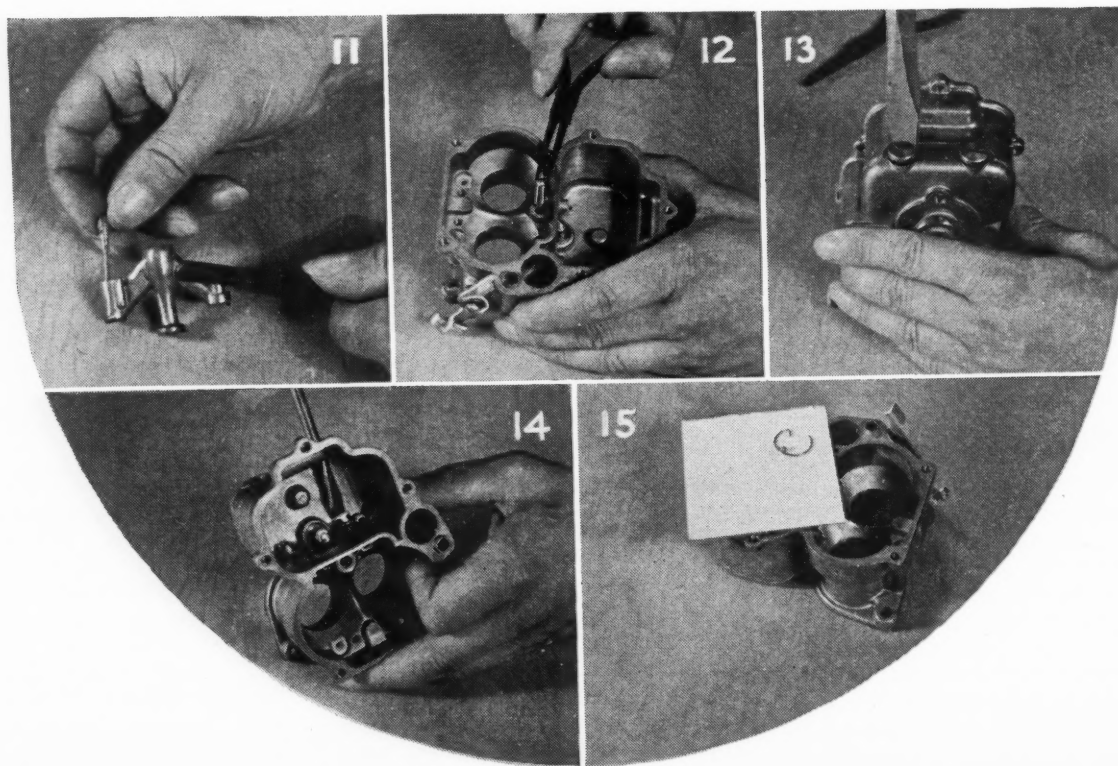
The cartoon which appeared on page 25 of the July issue made a big hit with Roy Berg, who was editor of MOTOR AGE in 1921 and

is now chief engineer of the automotive equipment department of Johns-Manville. Roy said that the cartoon reminded him of the time one of the readers was stuck with a foreign car on the desert flats of Utah. The owner, his party and the repair man were anxiously waiting advice from the MOTOR AGE Clearing House in order to put the car in running order. The desired information was sent by return wire, and the repair man got the job rolling. It would be interesting to know how many repair men we have helped during the years that the Clearing House has been in existence.

Bill Tobolsky

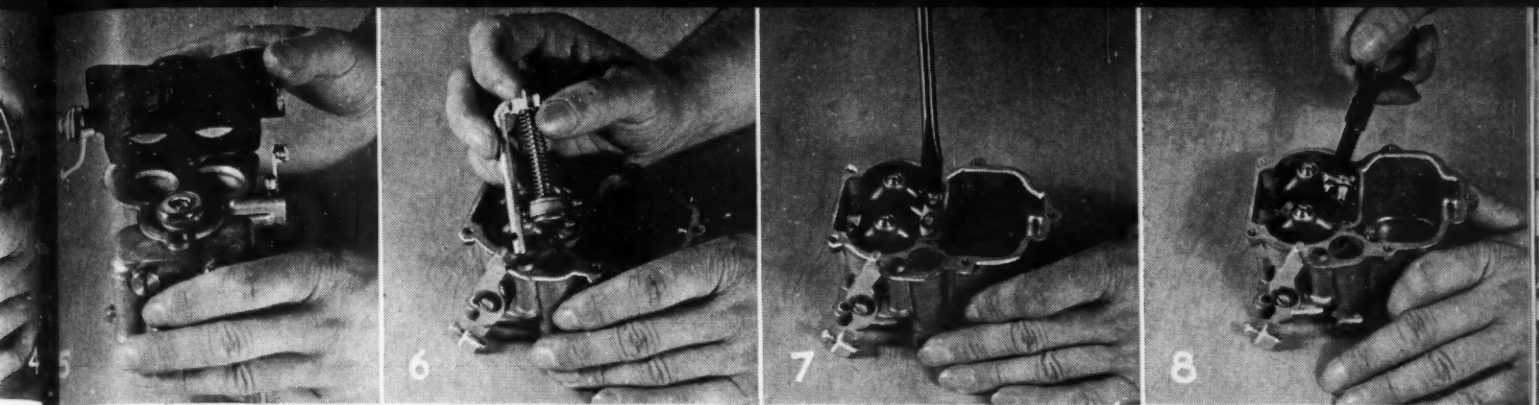


Servicing the **Chandler—**



1-
2-
3-
4-
5-
6-
7-
8-
9-
10-
11-
12-
13-
14-
15-

20



By
BOB TURNER

Groves Carburetor

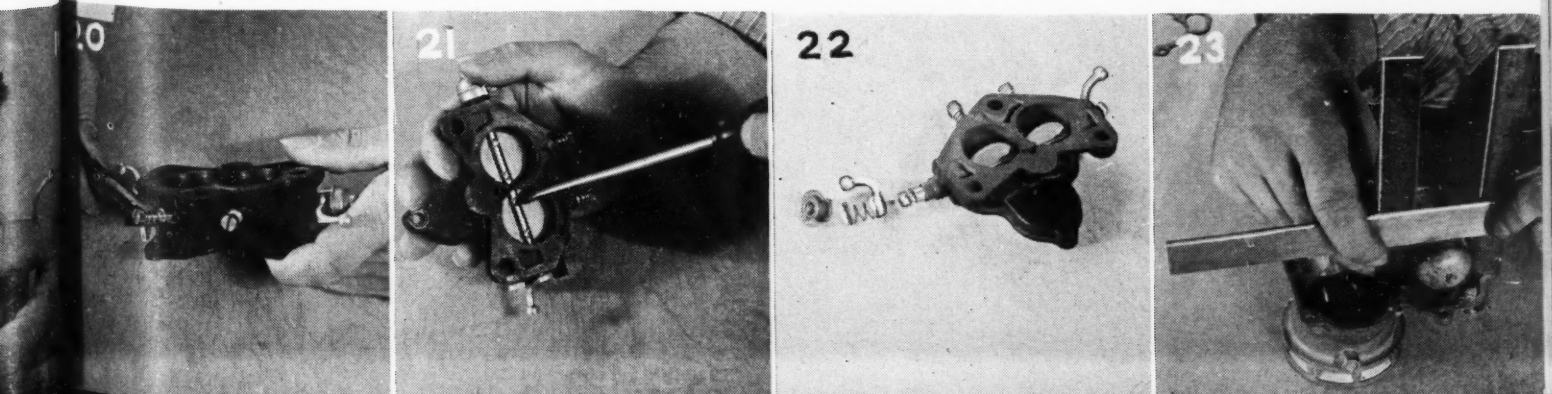
- 1—Remove screws holding air horn assembly to main body.
- 2—Lift air horn assembly off as a unit.
- 3—Remove accelerating pump link from throttle lever and pump rod.
- 4—Remove screws holding main body to throttle body.
- 5—Lift throttle body off main body assembly.
- 6—Remove accelerating pump assembly.
- 7—Remove the four screws holding nozzle bars in place.
- 8—Lift out the pump discharge nozzle.
- 9—Lift out the two nozzle bars.
- 10—Remove the nozzle air bleed plug from both nozzle bars.
- 11—Remove the idle tube assembly from both nozzle bars.
- 12—Remove the pump discharge needle.
- 13—Remove the two main jet plugs from the main body.
- 14—Remove both main metering jets after main jet plugs are removed.
- 15—Remove the pump check ball retainer and ball.
- 16—Remove the economizer valve assembly. This assembly may be removed by using an open end wrench that will fit the flats cast on the valve assembly. Threads are right hand.
- 17—Remove float assembly from air horn assembly by pulling out the float lever shaft.
- 18—Remove float needle from needle seat.
- 19—Remove float needle seat. Float needle seat threads are right hand.
- 20—Remove the two idle adjusting needles.
- 21—Remove the four screws that hold the throttle plates in place.
- 22—Remove the throttle lever hand from the throttle shaft by pressing hard toward body and rotating one-quarter turn. Then remove throttle shaft from body.
- 23—To set float level measure from bottom of float (not soldered seam) to machined face of casting by using two steel scales with straight edge touching bottom of float. Float level on Lincoln Zephyr is $1\frac{5}{16}$ in. to $1\frac{9}{32}$ in., on Ford V-8, $1\frac{13}{16}$ in. to $1\frac{11}{32}$ in.

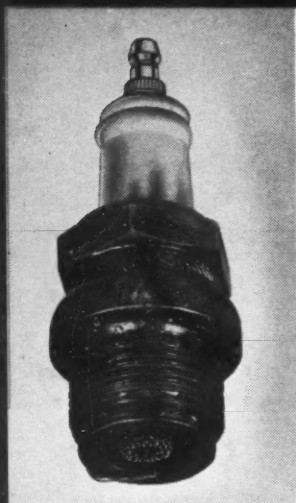
General—Clean out all passages with acetone and air. Allow carburetor parts to soak in acetone until all gum, dirt or deposit from gasoline is dissolved.

In reassembling carburetor reverse the above procedure. When assembling parts be sure to use new gaskets at every point requiring a gasket.

Use screw drivers that fit the head of the screws being worked on.

Tool equipment necessary to overhaul this carburetor consists of three screw drivers, one pair long nosed pliers and one open end wrench.

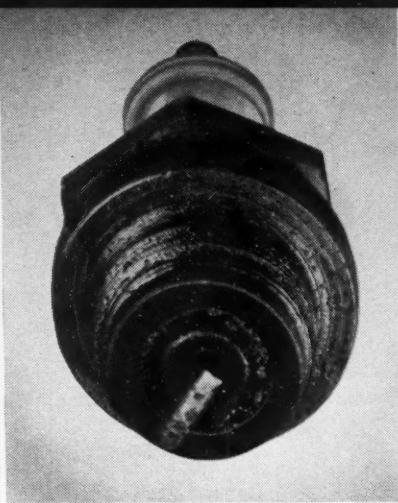




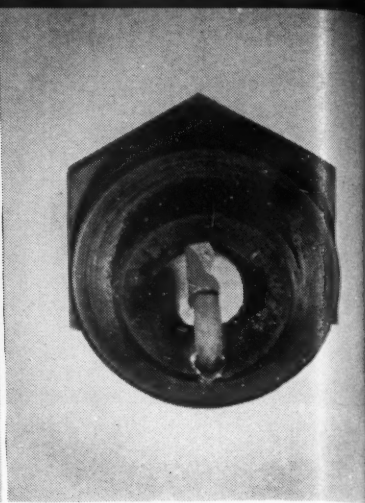
The blisters on the insulator indicate that the plug was too hot for the engine. Also note leakage indicated by the streaks on the external part of insulator



When the side electrode is excessively worn it generally indicates that the plug was loose in the cylinder or that the plug was too hot for the engine



The excessive carbon is an indication that the plug was too cold, or that the piston rings were worn. Sooting carbon indicates a rich mixture



This insulator was cracked because the gap was adjusted by bending the center electrode. Gaps should be adjusted by bending the side electrode only

Balanced Power

Requires Perfect Plugs

GETTING all the power out of each cylinder so that the engine hits evenly, requires expert tuning and particularly careful selection of spark plugs.

Race drivers and mechanics from the star of the local dirt track to the winner of the Indianapolis 500 make frequent checks of the spark plugs—not only to make sure that it is of the right type but also as a check on carburetion and fuel distribution.

Too often plugs are condemned as being of the wrong type when the actual difficulty may be in the engine carburetion or ignition. But, you have to know your spark plugs before you can use their condition as a guide when shooting trouble.

The first step is to check the type of plug to make sure that it is the type recommended by the manufacturer. However, it must be remembered that factory recommendations are for average driving. If the driver does a lot of high speed driving a colder plug will be required. If the car is used for short trips, so that the engine never gets warm, a hotter plug will be required.

In this connection, it must be remembered that a lot of cars are

—and here are some hints on selecting the correct type

fitted with special high compression cylinder heads. Such engines will, of course, require colder plugs than standard.

While on the subject of hot and cold plugs, it might be worth while to point out just what is meant by those terms. As shown in one of the illustrations, a hot plug is one in which the heat has to travel a relatively long distance before reaching the water jacket, while the heat path on a cold plug is relatively short. In general, the path the heat has to travel is dependent on the length of the insulation measured from the tip of the center electrode to the point where the insulator contacts the shell of the spark plug.

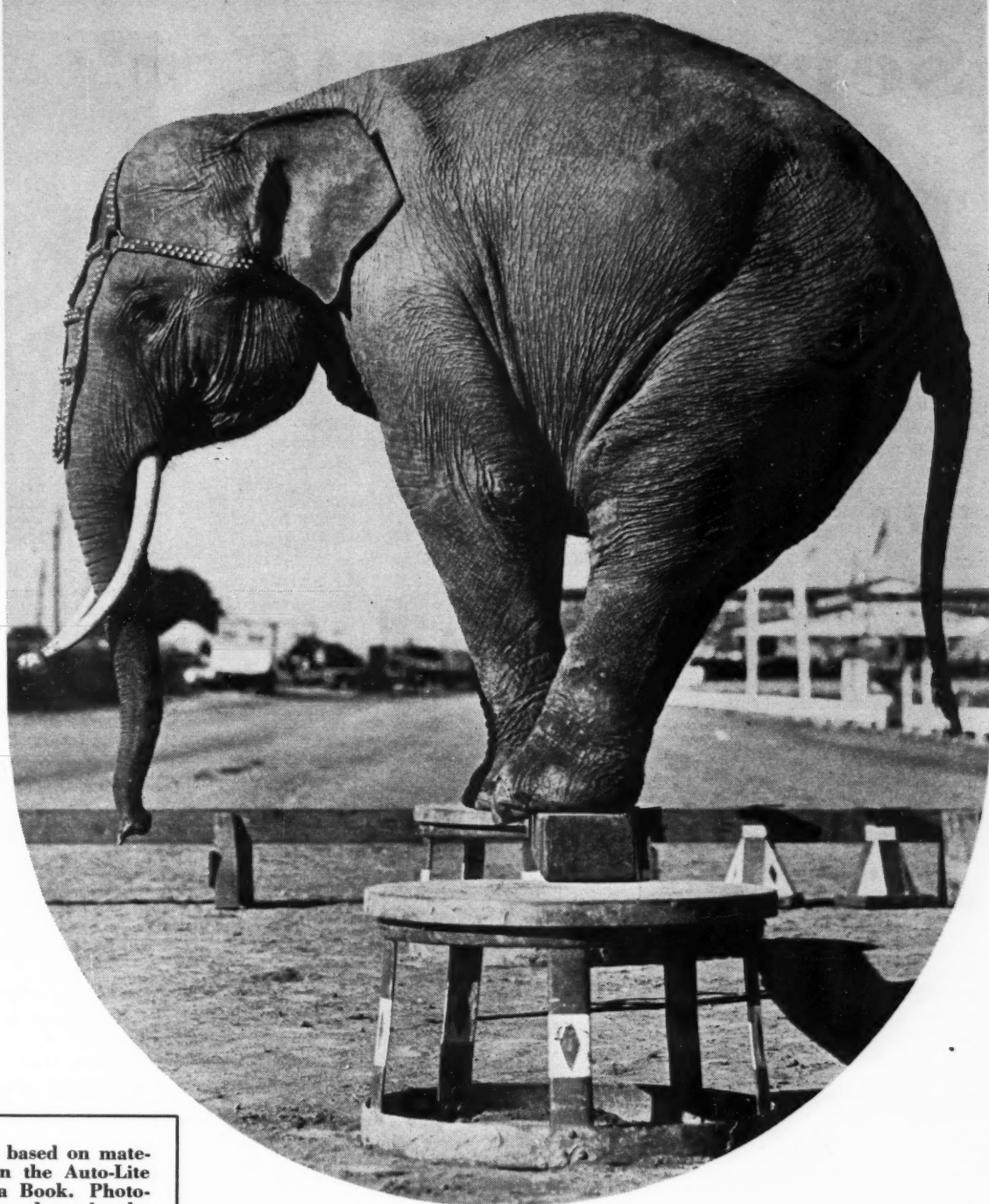
If two plugs, one hot and the other cold, are placed in the same engine, the electrode and insulator of the hot plug will attain a considerably higher temperature than the cold plug.

If the operating temperature of

a spark plug is too high, pre-ignition will result. In addition, the insulator will blister and the electrodes will wear rapidly. On the other hand, if the operating temperature is too low—that is, the spark plug is too cold for that particular engine—a carbon will accumulate on the insulator and the plug will soon foul and short.

To make this a little clearer and make it easier to remember, the old type of engine which had a compression pressure of less than 60 lb. would be known as a cold engine and would require a hot plug. A modern high speed high compression engine would be known as a hot engine and would require a cold plug to keep the operating temperature of the spark plug below the danger point of pre-ignition. Briefly, use cold plugs in hot engines and hot plugs in cold engines.

When a plug is running too hot, a colder plug should be substituted



This article is based on material appearing in the Auto-Lite Spark Plug Data Book. Photographs are also through the courtesy of the Electric Auto-Lite Co.

A plug that is running too hot can be recognized by the appearance of the insulator and the gap points will also be excessively worn. The appearance of the insulator will range from a whitish appearance in mild cases to a pock-marked, blistered and burned appearance in extreme cases. Very little carbon will be found on such plugs. In race engines, it is not uncommon to find plugs where the insulator has actually melted. As the race drivers say, the plug is pouring porcelain.

Pre-ignition will be accompanied by "spitting" back in the carbure-

tor and the action is something similar to a lean mixture or a defective condenser. In many cases, the plugs will operate satisfactorily until high speed is reached or when climbing a long steep hill that requires full throttle. Then, the engine will lose speed and power and have a tendency to spit back in the carburetor.

However, a spark plug may be forced to pre-ignite if the carburetor is too lean. Clogged carburetor jets, low fuel level, clogged water jackets, plug not screwed in securely, burned valves, excessive carbon accumulations, excessive spark ad-

vance, leaking valve guides and defective intake manifold gaskets will also cause pre-ignition.

If only a few of the plugs are running hot, it generally indicates leaking valve guides or manifold gaskets at those particular cylinders.

Fouling may be considered the reverse of pre-ignition and results from using a plug that is too cold for that particular engine. There are two types of fouling, gas fouling and oil fouling. In the former, the insulator and plug become covered with dry sooty carbon. There

(Continued on page 44)

Service Hints

from

The Factories

Failure of Lights on Commander and State Commander (Models 7A, 8A and 4C)

Sticking voltage regulator points on 1938 Models 7A Commander, 8A State Commander, and 4C President may cause the lamp bulb to burn out and not affect the light fuses. When a fuse burns out the condition is usually caused by a short circuit in the electrical system.

The first type connectors used in the 1938 models incorporated a stiff spring action and in some cases the mating portion of the wire may not be pushed completely into place. When such a condition occurs, a short circuit may result because the metal connector on the end of the wire will project from the fiber connector.

The proper correction for a condition of this kind is to make sure that the connections are pushed completely into place or if necessary replace the connectors.

Hard Steering

In the event hard steering is experienced in connection with the 1938 Studebaker models (7A, 8A and 4C), during cold weather, the adjustment of the steering gear should be carefully checked. The cross shaft thrust

screw should be properly adjusted and, if necessary, an additional .003 in. shim installed to increase the steering post end play and eliminate the stiffness in the steering gear. In addition, the steering gear lubricant should be checked and if it is too heavy it should be changed to winter grade.

Chevrolet 1938 Loading on Rough Roads

When servicing 1938 Chevrolet carburetors, care should be exercised to assure installation of proper body gasket No. 121-55. This gasket allows by-pass for vent.

Do not install gasket 121-46. No hole is provided in this part for the vent by-pass.

Pontiac Steering Gear

During steering gear adjustments, a weighing scale should be used to determine the load at the rim of the steering wheel to insure proper adjustment. Also work to the low limit of service specifications for better steering, ½ lb. worm bearing load, and 1½ lb. total load through the high point.

Chevrolet Engine Side Mounting

In cases of loose engine side mounting of the 1937 Chevrolet passenger car resulting from operation over very rough roads, the length of the mounting bolts should be checked. These bolts should be 11/16 in. long measured from under the head to the end of the bolt. Too long a bolt will bottom in the rubber mounting and not apply the proper tension.

To Replace Light Circuit Fuses—1938 Studebaker Models (7A, 8A, and 4C)

The replacement of the light circuit fuses is not a difficult operation while sitting in the center of the front seat if performed in the following manner:

1—Remove ash receiver container from the instrument panel. This will make the fuses visible through the opening.

2—Open the cowl ventilator so that the handle is in its extreme forward position.

3—While looking through the ash receiver opening in the instrument panel, remove the burned out fuse with the left hand. A flashlight may be useful at night in locating the fuse sockets.

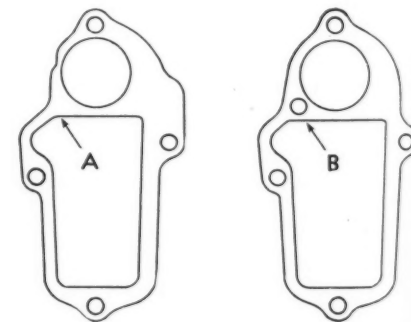


A device that literally "steps on the brakes" is used to test every De Soto as it comes off the assembly line. Putting 600 lb. of pressure on the brake pedal, this test apparatus checks the entire brake system to be sure of no leaks. The minutely accurate pressure dial is shown in the picture above.

The fuse for the headlamp and the main lighting circuit is located nearest to the back of the instrument panel. When it becomes necessary to replace the lighting fuse, it is advisable to first remove the other fuse, to which the instrument panel lights and the accessories are connected.

Bowl Cover Gasket on 1938 Carburetor

Care should be used when assembling 1938 Chevrolet carburetors to make sure that the correct gasket is used between the bowl and the cover. It should be remembered that while the 1937 gasket will apparently fit, the resulting operation will be entirely unsatisfactory due to the fact that



this wrong gasket (above A) seals over the balancing port which leads up to the tower in the bowl cover. When this incorrect gasket has been used, it will be found that the car will not idle properly. Therefore, it is essential that the correct 1938 type gasket, Part No. 838700, be used in service (above B).



"Let's see your driver's card!"



By
BILL TOBOLDT

Jobbers and Independents

Pulling Together for Profits

KEEPING the car owner satisfied with prompt and effective service is the big job of the independent repair shop operator. It's a vitally important job any way you look at it. Vitally important is the correct way to describe it, for the rendering of service that is really prompt and really effective is the kind of stuff on which the business lives and grows.

How many independent repair shops could give the kind of service that conditions of today demand without the assistance and cooperation of the jobber? Suppose there were no automotive jobbers, what would the situation be? For one thing, and just one thing, every independent repair shop would have to carry a huge stock of parts, not for one make of car but for practically all makes and models. Car owners now expect jobs done in minutes or, at most, in hours, that some years ago took days. Carrying a stock of parts sufficient for even minimum needs would tie up a lot of money, take a lot of space and call for an added number of employees. The jobber, as one part of his

contribution to the service business, assumes this load. He takes it off the repairman's shoulders.

And the help the jobber gives by no means stops there. What about his machine shop; the service equipment which he carries in stock, demonstrates and finances? What about the credit he extends? What about the merchandising and service advice which he gladly offers and of which the smart repair shop operator avails himself to the fullest possible extent? What about a lot of other things?

There is a mutually profitable opportunity for closer and more effective team-work between the independent repair shop operator and the jobber, but all the advantages to be derived will materialize only when both independent and jobber realize that they are actually partners who should pull together.

On the following pages, **MOTOR AGE** presents the contributions of some widely experienced leaders of thought on jobber-independent relations. Read them carefully, determine to apply them practically.

Jobbers and Independents



Jobbers and Independents Need One Another's Cooperation



by HENRY LANSDALE
General Manager, National Automotive
Parts Association

THE automobile repairman, or the garageman, was called into being originally by the automobile owner, who wanted his car to run. The automotive jobber in turn was called into being by the automobile repairman, who found that through his own efforts he could not profitably stock, or secure quickly enough to satisfy his customers, all the parts which he required to service all the automobiles which came to his shop for help.

Even in the early days of the indus-

try the automotive jobber performed a highly essential and unduplicated service. And as the number of automobiles in use has grown to its present figure and automobiles have advanced mechanically, the problem of servicing them without delay has become constantly more complex, and the jobber consequently has become a constantly more essential factor.

Because of his singleness of purpose, the automotive jobber offers the repairman a service which is built precisely to fit the repairman's needs.

The jobber's entire business life is devoted to providing for the repairman all the parts, all the materials and all the services which the repairman may require to satisfy the demands of the car owner—regardless of what make or model of car he may happen to possess.

The jobber and the repairman are equally essential to each other. To all intents and purposes, they are partners in the business of keeping the nation's cars running, each of them operating his own division of the business, and each of them depending on the other to discharge his particu-

lar duties conscientiously and efficiently.

As with any mutual enterprise, if it is to succeed to the fullest extent, there must be complete cooperation between the partners and complete loyalty to each other. Where this complete loyalty and cooperation do not exist, on the part of either partner, both are needlessly handicapped.

On the part of the repairman, this loyalty and cooperation can be expressed only in one way, and that is by making all his purchases of parts and materials from the jobber who provides this service for him. To do otherwise is to cripple his partner, the jobber, in his efforts to constantly improve his service to the repairman.

On the part of the jobber, this loyalty and cooperation are expressed through the maintenance of adequate stocks, prompt service on all parts for all cars, assurance of standard quality and the furnishing of reliable service information.

It is a big job, and a difficult job, which the jobber has to hold up his end of the business, and the function which he fulfills is today more important than ever before to the independent repairman, and the car owners who are his customers.

It is the full realization of the value, the necessity and the complexity of the service performed by the jobber which has led the National Automotive Parts Association, in cooperation with the manufacturers of non-competing automotive lines, to develop a national system of warehousing and distribution which helps the jobber to give the repairman a better and more efficient service on automotive parts and materials—and to make sure that the parts he sells are of standard quality.

Pulling Together for Profits



Try Running Water Through A Shower Spray on a Piece of Tin

by MARTIN E. GOLDMAN
Aikin-Kynett Co.

IT is said that during the production of an important theatrical piece the director experienced a lot of difficulty in getting a satisfactory effect of the sound of a steady rain on a tin roof. Sound effect men of considerable reputation were unable to solve the problem. All sorts of tricks were tried and discarded. Finally an inexperienced extra had the effrontery to suggest running water through a shower spray upon a sheet of tin. And thus was the intricate problem solved.

Whenever I hear or read a lot of theorizing and discussing of the importance or non-importance of the "independent" jobber to "independent" dealers—whenever the pros and cons submit their weighty economic evidence in support of their particular contentions—I am reminded of that theatrical story.

It seems to me that, as was true in the case of the sound effect, the surest way to evaluate the jobber is by a simple review of the facts rather than by intricate economic studies, market researches, or technical argument.

Let's take the case of Bill Jones who owns and operates a typical general service station in your or my town or neighborhood. Jones gives most any kind of service. He sells gas and oil, does motor work, brake



service, battery service, tire service, and so on, ad infinitum. He is one of over 100,000 automotive "shops" which play a vitally important part in keeping 26,000,000 automobiles riding the highways and byways of these good old United States.

It is 8:00 o'clock Monday morning—just an ordinary Monday morning. As Bill Jones enters his shop, Mike, the mechanic, hands him a list of parts which he "needs right away" for that 1934 Hupp which was towed in Sunday night with a broken axle. "I promised that job for noon," says Mike, "so get those parts over here pronto."

Bill Jones calls the Auto Supply Company—a typical automotive jobber—gets one of the counter boys on the line, and reads him Mike's list. This "counter boy" is no ordinary clerk—he really knows his stuff—knows *all* of the parts which *might* be needed on any type of job. As Jones reads Mike's list, the counter boy mentally checks that rear axle installation. "And how about new felt washers?" he queries. Mike confirms the need for them and a couple of other suggestions, and then with a cheery "Thanks, Mr. Jones. The stuff is on the way," the counter boy gets off the phone and on the job.

Remember, it was 8:00 o'clock Monday morning when Bill Jones got to his shop. At 8:50 the parts for that Hupp job are in Mike's hands. And, in the meantime Mike has been getting set to "put 'em together" and, believe it or not, the job got out on time.

At 9:00 o'clock the man on the lube rack reports "something wrong with the lift and there are several lube jobs which must get out." That lift was purchased through Auto Supply Company—the same jobber who rushed out the parts for the 1934 Hupp. Once again Bill Jones gives 'em a call. This time he talks to the Service Department. Surely they'll get a man over right away. They do. There is a broken part in the lift. Where will they get it? You guessed it! This same Auto Supply Company carries parts to service the shop equipment it sells as well as having men to service it. By 9:45 the lift is back on the job.

At 11:00 o'clock O'Hara, the territory salesman for Auto Supply, makes his "regular" call on Jones. "He knows as much about this business as I do myself," says Jones. O'Hara systematically checks Jones' inventory of lamp bulbs, spark plugs, fan belts, storage batteries, tubes, oils and lubricants, and accessories. He writes up an order for the items to replace stuff sold since his previous call. He checks with the mechanic to

(Continued on next page)

Jobbers and Independents



see what tools they need. Then he spends quite some time talking to Jones about ways and means to modernize and improve the business.

O'Hara has worked closely with Jones for several years. In fact, when O'Hara first called on Jones the latter just had a sorta garage in which he did "general repairs." Jones had very little capital and had never before been in business for himself. He did have a good location, a fine personality, and a real willingness to work and progress.

O'Hara and Jones are reminiscing a bit. Let's you and I listen in. "Well," said Jones, "maybe you're right about this brake department equipment and the possibility for merchandising it. You've surely

steered me right up to now. I was really scared to pieces the day you talked me into buying that battery charger and tester and a stock of batteries and got me to really go after the battery business in the right sort of way. But it surely worked out just as you said it would. I'd never have been able to get that equipment if it hadn't been for your 'pay-out-of-profits' plan. And then when I saw how the profits from batteries and battery service were not only paying for the equipment but giving me some cash profit besides, boy, how I wanted to jump in and buy all kinds of equipment right away! And say, O'Hara, I surely appreciate the way you held me in check and made me develop this busi-

ness sanely and sensibly and without ever getting in debt over my head."

"Well," said O'Hara, "you see we were building together. As you built your business, I was building mine. Your purchases when you first opened up wouldn't justify the attention of any jobber's man but now you're a pretty sweet customer for me."

"I must be," said Jones, "cause there isn't a day goes by now that some salesman and often the district manager for some big tire company or major oil company doesn't try to sign me up, and for the first three years I was in business none of those guys ever gave me a tumble."

"Well," said O'Hara, "it's only natural that the bigger and better your
(Continued on page 50)

An Open Mind Alert to New Developments Marks the Jobber Who'll Help You Most

by GEORGE L. BRIGGS
Executive Vice-President, Wilkening
Manufacturing Co.



HOW may automotive jobbers serve best the independent repair shops and service stations?

By being entirely and completely and aggressively open-minded!

The business of the automotive jobber has been described as a daily handling of a mass—or mess, according to the point of view—of exasperating details.

Even though he may feel that he is buried beneath the burden of managing so detailed a business, the enterprising jobber who renders a self-justified service never forgets that the most essential function he has to perform is to keep his trade constantly informed of the new things, whether they be merchandise for resale, equipment for use, methods of service or methods of selling.

Any one can buy, stock, sell and deliver merchandise and service; extend credit; put delinquent debtors on C. O. D.; and—which seems these days to be an essential of jobber management—return goods to manufacturers. But the exceptional jobbers—usually the successful ones—rise above the handling of these details and devote themselves, constantly and aggressively to the vital task of keeping the trade informed of new things. Such jobbers fill an important place in the automotive distributing and marketing system and render a really helpful service, which cannot be duplicated in any other way, to independent repair shops and, through them, to automobile users generally.

The kind of open-mindedness that this type of jobber has is that which is alert, aggressive, searching to find the new developments.

In the automotive industry change is the order of the day. The dullest

Pulling Together for Profits



automotive years are those in which there is the least change. Independent automotive repair men and service station operators are open-minded. As a class of men they are probably more interested in news of new things in their business than any other group. There is, of course, the occasional exception still specializing on the service of Model T Fords. Jobbers are not interested in the business of those exceptions.

So, to automotive jobbers the cardi-

nal principle must be, and to the successful ones it is, to be aggressively and alertly open-minded, searching for the new and latest, training all members of the jobbing organization to spread the news of new things interestingly and helpfully among the independent repairmen and service station operators.

To the independent repair shop operator I would say, therefore, pick an alert, progressively open-minded jobber and do business with him.



Merchandising Cooperation Points to Profits for Independents and Jobbers

by E. P. CHALFANT

Executive Vice-President, National Standard Parts Association

IN a market so vast as the automotive after-market industry, there is a growing need for efficient cooperation between the jobber and the independent repair shop in order that both may obtain the most of the motorist's dollar.

The independent garageman has developed into a well-rounded outlet for everything the car owner requires in the way of service and supplies for his automobile. The jobber provides a source of supply for the repairman's wants and aids him in many ways in conducting his business. Through cooperation both may profit in serving the motorist who today spends more than 60 per cent of the money in the automobile industry for maintenance on his car.

Today there are almost thirty-one million automobiles and trucks in the United States which are being serviced, to a large extent, in the more than 101,000 independent repair shops. This means that every independent garageman has the opportunity of aiding in the maintenance of an average of 297 cars.

How to secure the most of that business is the paramount issue confronting

not only the garageman, but also the jobber, for only as the repair shop succeeds can the jobber build his business because the independent repairman represents 60 per cent of the total jobbers' volume and provides him with 80 per cent of his gross profit.

Cooperation in merchandising is the answer for both jobber and independent garageman, I believe. In many ways the jobber is in a unique position in relation to the garageman and he has the greatest responsibility in cooperating with him through merchandising plans and programs.

First of all, the jobber aids the independent repairman by acting as his consultant and buyer, offering him carefully selected, nationally-known, quality merchandise that is backed by his own guarantee as well as that of the manufacturer. The garageman saves time and money by purchasing from one source of supply and his mechanics can devote all of their time to making money for themselves and their boss in the shop, rather than wasting time and money out looking for parts or other supplies.

Most jobbers now have efficient and specialized mechanical departments where special repair work can be done for the independent repairman, thereby aiding him in getting more jobs

and making more money. In the field of credit, the jobber is in a position to cooperate with the garageman by extending credit courtesies and making reasonable adjustments.

But it is in the field of merchandising that the jobber and independent garageman have the greatest responsibility for cooperation. In many ways the jobber and his salesmen can give the repairman sales and merchandising ideas that help the latter to get more car owner business. It is to the garageman's interest to do all that he can to carry out the merchandising programs suggested by the jobber.

The day of the alley-repairman and the greasy, dirty garage where it is too dark for the car owner to even see what work is being done on his car, are past so far as profitable operation is concerned. It is the independent garage with a clean, attractive place of business equipped with good tools, good merchandise and staffed with well-trained, efficient mechanics that is getting the business today.

It is the jobber who can help the most with the establishment and maintenance of such garages. And it is in such places that the independent repairman really can make the most of the vast market for car maintenance through merchandising cooperation with the jobber.

A Directory of National Association Jobbers

The jobbers listed here geographically are members of three national associations. Space limitations make it impossible to include all of the several thousand jobbers, scattered throughout the country, who are rendering effective service to the automotive trade. Symbols before names below indicate association membership as follows: †,

National Standard Parts Assn.; ‡, Motor Equipment Wholesalers' Assn.; *, National Automotive Parts Assn. The letters following the names indicate products handled: P, Replacement Parts; E, Electrical Parts; Q, Shop and Garage Equipment; T, Tools; A, Accessories and Supplies. Numbers indicate number of salesmen traveled.

ALABAMA

ANDALUSIA
†Taylor Parts & Supply Co.—PEQTA-3

BIRMINGHAM
†Alabama Auto Parts Co.—PEQTA-4
†Lawson Auto Parts Co., Inc.—PEQTA-5
†United Auto Supply Co.—PQTA-5

MOBILE
†Southern Auto Parts Co.—P

MONTGOMERY
†Johnson Tire Supply Co.—PQTA-6
†Parts Service Corp.—PEQTA-7

ARIZONA

PHOENIX
†Motor Supply Co.—PEQTA-18
†Phoenix Auto Supply Co.—PEQTA-7
†Stuckey Auto Supply Co.—PEQTA-4

TUCSON
†Complete Auto Parts Co., Inc.—PEQTA-4

ARKANSAS

FORT SMITH
†The Automotive, Inc.—PEQTA-19
†Williams Hardware Co.—PEQTA-7

LITTLE ROCK
†Crow-Burlingame Co.—PA-14
†555, Inc.—PEQTA-9
†Voss-Hutton Co.—PEQTA-8

CALIFORNIA

ALHAMBRA
†P & W Parts Store—PEQTA-1

BAKERSFIELD
†Pioneer Mercantile Co.—PEQTA-5

COMPTON
†Covey Auto Parts—PEQTA-2

EL CENTRO
†Valley Auto Supply Co.—PEQTA-5

EUREKA
†Kramer Auto Supply Co.—PEQTA-1

FRESNO
†Harrison Motor Parts—PEQTA-4
†Lindley & Harrison—PEQTA-4

GLENDAL
†Penner Pauff, Inc.—PEQA-5

INGLEWOOD
†Gibson Motor Parts, Inc.—PEA-3
†Inglewood Motor Parts Co.—PEQA-2

LONG BEACH
†Curtis & Christensen, Inc.—PEQTA-5

LOS ANGELES
†Automotive Sales, Inc.—PEQTA-6
†Colyear Motor Sales Co.—PEQTA-6
†Featherstone's, Inc.—PEQTA-12
†Fey & Krause, Inc.—PEQA-4
†Frazier-Wright Co.—PEQTA-4
†Kay & Burbank Co.—PEQTA-7
†Lambert Co., Ltd.—PEQTA-12
†Glenn Wellington Auto Parts—PEQTA-2

MODESTO
†Strong's Auto Parts—PEQTA-4

MONTEREY
†Sweet Service Co., Inc.—PEQTA-2

OAKLAND
†George A. Kreplin Co.—PEQTA-8

PALO ALTO
†Palo Alto Parts Co.—PET-3

SACRAMENTO
†Henderson Brothers—PEQTA-5

SALINAS
†Lacey Parts Co.—PEQA-2

SAN BERNARDINO
†Johnson Motor Parts—PEQTA-2

SAN DIEGO
†Motor Hardware and Equip. Co.—PEQTA-6

SAN FRANCISCO

†American Gear and Motor Service—PQA-5
†Chanslor & Lyon Stores, Inc.—PEQTA-45
†Lambert Co. or Northern California—PEA-3
†Motor Parts Sales Co.—PEQT-3
†Patterson Parts, Inc.—P-6

SAN JOSE

†Farnsworth & Callahan—PEQTA-2

SAN LUIS OBISPO

†Standard Auto Parts—EQTA-4

SAN PEDRO

†Automotive Parts Co., Inc.—PEQTA-1

SANTA ANA

†Hockaday & Phillips, Inc.—PEQTA-7
†Santa Ana Motor Parts and Machine Works—PEQTA-2

SANTA MONICA

†Bruner & Miller—PEQTA-2

SANTA ROSA

†Crown Machine Works—PEQTA-3
†E. C. Kraft & Co.—PEQTA-5

STOCKTON

†Maxwell Motor Supply Co.—PEQTA-3
†Morris Auto Supply Co., Inc.—PEQTA-3

VALLEJO

†National Auto Parts Co.—PEQTA-2

VAN NUYS

†Sturtevant's Auto Parts—PEQTA-3

VENTURA

†L. N. Diedrich, Inc.—PEQTA-2

VISALIA

†Automotive Supply Co., Inc.—PEQTA-3

WHITTIER

†Whittier Motor Parts—PEQTA-2

COLORADO

COLORADO SPRINGS
†Glen Shultz Auto Supply Co.—PEQTA-1

DENVER

†Auto Equipment Co.—PEQTA-15
†Denver Gear and Parts Co.—PEQTA-4
†Foster Auto Supply Co.—PEQTA-8
†Hendrie & Bolthoff Mfg. & Sup. Co.—PEQTA-7
†Moore Hardware and Iron Co.—PEQTA-7
†Quinn & McGill—PEQA-6
†B. K. Sweeney Electrical Co.—PEQTA-9

PUEBLO

†Motor Accessory and Parts Co.—PEQTA-7

STERLING

†Stickney's—PEQTA-7

CONNECTICUT

BRIDGEPORT
†Collins & Leary, Inc.—PEQTA-3
†D'Elia Electric Co., Inc.—PEQTA-3

DANBURY

†Harry's Auto Parts—PEQTA-2

HARTFORD

†L. L. Ensworth & Son, Inc.—PEQA-4
†Grinold Auto Parts, Inc.—PEQTA-9
†Magic Auto Supply Co. of Hartford, Inc.—PEQTA-3
†Nutmeg Auto Supply Co.—PEQTA-6

MIDDLETOWN

†Page & Warner, Inc.—PEQTA-3

NEW HAVEN

†Connecticut Bearings Co., Inc.—PEQTA-3
†Horton-Gallo-Creamer Co.—PEQTA-6
†Louis H. Weiner of N. H., Inc.—PEQA-5

STAMFORD

†Charles L. Woundy, Inc.—PEQA-3

WATERBURY

†Kaplan Brothers—PEQTA-1

DELAWARE

MILFORD
†Wharton & Barnard—PEQTA-3

WILMINGTON

†Taylor Auto Supply Co.—PEQTA-8

DISTRICT OF COLUMBIA

WASHINGTON

†Bearings Sales Corp.—PQTA-4
†Creel Brothers—PEQTA-4
†General Electric Supply Corp.—EQTA-4
†L. S. Jullien, Inc.—QA-3
†Phelos-Roberts Corp.—PEQTA-6
†Southern Wholesalers, Inc.—PEQA-8
†Standard Automotive Supply Co., Inc.—PQTA-5

FLORIDA

JACKSONVILLE

†Auto Parts Co.—PEQTA-4
†Consolidated Automotive Co.—PEQTA-12

MIAMI

†Holden-Wood, Inc.—PEQTA-6
†Miami Parts and Spring Co., Inc.—PEQTA-8

ORLANDO

†Rich Auto Supply Co., Inc.—PEQTA-3

GEORGIA

ALBANY

†Ferrell-Wight Co.—PEQTA-5

ATLANTA

†Alexander-Seewald Co.—PEQTA-9
†Automobile Piston and Parts Co.—PEQTA-6
†Genuine Parts Co.—P-8
†Southern Bearings and Parts Co.—PETA-4

COLUMBUS

†Butler Brothers Co., Inc.—PEQTA-12

MACON

†Bearings Supply Co.—PT-3
†A. S. Hatcher Co.—PEQTA-3

SAVANNAH

†Frank Corporation—PEQTA-5
†Motor Supply Co.—PEQTA-10

IDAHO

BOISE

†Bertram Motor Supply Co.—EQTA-2

IDAHO FALLS

†Auto Parts Co.—PEQTA-2

POCATELLO

†Mackenzie Auto Equip.—PEQTA-3

ILLINOIS

CHAMPAIGN

†Rogers Motor Equipment Co.—PEQTA-2
†Sparks Auto Supply—PEQTA-2

CHICAGO

†A. C. Auto Parts & Machine Works—PETA-2
†Auto Parts and Gear Co.—PEQTA-3
†Chicago Auto Parts, Inc.—PEQTA-10
†Grimm-Hansen Treland, Inc.—PEQTA-11
†Harrison Wholesale Co.—PEQTA-12
†Heckman Co.—PA-2
†Illinois Auto Electric Co.—PEQA-8
†Andrew Johnson—PEQTA-4
†Motive Parts Co. of Amer., Inc.—PEQTA-16
†Motor and Axle Parts Service—PEQTA-5
†Standard Unit Parts Corp.—P-7
†Universal Automotive Supply Co.—PEQTA-7

DANVILLE

†E. B. Collins Co.—PEQTA-8
†Marlatt Battery and Mfg. Co.—PEQTA-6

DECATUR

†Brown's Auto Supply—PEQTA-3

DIXON

†Dixon Auto Parts Co.—PEQTA-1

GALESBURG

†P. & M. Accessory Co.—PEQTA-3

HARRISBURG

†Rogers Auto Supply Corp.—PEQTA-3

JOLIET

†Barrett Hardware Co.—PEQTA-4
†Trackman Auto Supply Co.—PEQTA-3

MARION

†Blankenship & Co., Inc.—PEQTA-5

PEORIA

†Cummings & Emerson—PEQTA-12
†Graham-Seltzer Co.—PEQTA-6
†Peoria Auto Parts Co.—PEQTA-3

QUINCY

†Quincy Automotive Supply Co.—PEQTA-10
†Tenk Hardware Co.—PEQTA-5

ROCKFORD

†Eric J. Gustafson—PQTA-3
†Schacht-Tuck Co.—PEQTA-7

SPRINGFIELD

†Central Illinois Wholesalers—PEQTA-5
†Springfield Auto Supply Co.—PEQTA-7

WASHINGTON

†Washington Supply Co.—PEQTA-7

INDIANA

EVANSVILLE

†Orr Iron Co.—PEQTA-8

FORT WAYNE

†R. M. Kaough Co.—PEQTA-6
†Korte Brothers, Inc.—PEQTA-3
†Motor Parts and Equipment Co.—PEQTA-3

INDIANAPOLIS

†Central Motor Parts Co., Inc.—PEA-7
†Central Rubber and Supply Co.—PEQTA-10
†Gibson Co.—PEQTA-30

LAFAYETTE

†Peter Anderson Co.—PEQTA-2

SOUTH BEND

†Motor Service and Parts, Inc.—PETA-2

TERRE HAUTE

†Terre Haute Heavy Hardw. Co.—PEQTA-10

WABASH

†G. C. Baber Motor Supply—PEQTA-7

IOWA

CEDAR RAPIDS

†Auto Parts Co.—PEQA-2
†Barron Motor, Inc.—PEQTA-6
†Cedar Rapids Auto Supply Co.—PEA-8

CLINTON

†Clinton Auto Parts Co.—PEQTA-3

CRESTON

†Creston Auto Supply Co., Inc.—PEQTA-4

DAVENPORT

†Auto Parts Co.—PEQA-4
†Sieg Co.—PEQTA-10

DES MOINES

†Herring-Wissler Co.—PEQTA-14
†William H. Metz Co.—PEQTA-5
†Standard Motor Parts Co.—P-6

DUBUQUE

†Midwest Timmermann Co.—PEQTA-4

FORT DODGE

†Sieg Fort Dodge Co.—PEQTA-7

MUSCATINE

†Auto Parts Co.—PEQTA

SIOUX CITY

†Ralph C. Schwinn Co.—PEQTA-4
†United Wholesalers—PEQTA-11
†W. A. Walbert Co.—PEQTA-4

SPENCER

†Arnold Motor Supply—PEQTA-10

WATERLOO

†Lewis Motor Supply—PEA-7
†Repass Automobile Co., Inc.—PEQTA-9
†Standard Battery and Elec. Co.—PEQTA-8

KANSAS

DODGE CITY

†Combs Automotive Co.—PEQTA-4
†Woolwine Scheufler & Dunn Parts Co.—PEQTA-2

BEND

†Scheufler Supply Co., Inc.—PEQTA-4

OTTAWA
†Curby Auto Supply Co.—PEQTA-2

PRATT
†Woolwine Supply Co.—PEQTA-4

SALINA
†Merrill Supply Co.—PEA-6

TOPEKA
†Southwick Automotive Sup. Co.—PEQTA-6

WICHITA
†Johnson Bros. Auto Supply Co.—PEQA-6
†Motor Equipment Co.—PEQTA-26

KENTUCKY

BOWLING GREEN
†Motor and Elec. Supply Co., Inc.—PEQTA-3

COVINGTON
†Monarch Auto Supply Co.—PEQTA-5

LEXINGTON
†Kentucky Ignition Co.—PEQTA-9
†Wombell Automotive Parts Co.—PEQTA-6

LOUISVILLE
†Atlas Parts & Grinding Co., Inc.—PEQTA-4
†Motor Parts Depot—PEA-4

PAINTSVILLE
†Cox Auto Parts—PEQTA-2

LOUISIANA

ALEXANDRIA
†Rapides Auto Supply Co., Inc.—PQTA-5
†Standard Auto Parts and Machine Co., Inc.—PEQA-2

BATON ROUGE
†Barnes Motor Supply—PEQTA-4

MONROE
†Motor Supply Co., Inc.—PEQTA-6

NEW ORLEANS
†Interstate Electric Co.—PEQTA-9
†New Orleans Auto Sup. Co., Inc.—PEQTA-3
†Rykoski, Inc.—PEQTA-5
†Oliver Van Horn Co., Inc.—PEQTA-6

SHREVEPORT
†Automotive Parts Co.—PEQTA-6
†Crawford Co., Inc.—PEQTA-5
†Interstate Electric Co.—PEQTA-4

MAINE

AUBURN
†Darling Automobile Co.—PEQTA-4
†R. I. Mitchell, Inc.—PEQTA-4

AUGUSTA
†Fifield Brothers Co.—PEQTA-2

BANGOR
†American Gear Co.—PEQA-2
†N. H. Bragg & Sons—PEQTA-4
†Spring Service Co.—PA-2

LEWISTON
†Motor Supply Co., Inc.—PEQTA-3

PORTLAND
†James Bailey Co.—EQTA-8
†Farrar-Brown Co., Inc.—PEQTA-12

MARYLAND

BALTIMORE
†K. & G. Sales Co.—PQT-9
†R. J. Loeck & Co.—PEQTA-8

HAGERSTOWN
†Maryland Motor Co.—PEQTA-4

MASSACHUSETTS

BOSTON
†American Gear Co. of Mass., Inc.—PEQTA-3
†Campbell Motor Parts Corp.—PEQA-6
†George Collins Co.—PEQTA-11
†Harvey Sales and Service Co.—PQA-3
†Hunt-Marquardt, Inc.—PEQTA-9
†Littlefield-Greene Corp.—EQTA-15
†Standard Auto Gear Co., Inc.—PEQTA-9

CAMBRIDGE
†Butts & Ordway Co.—PEQTA-15

CHELSEA
†Everett Avenue Auto Parts Co.—PEQTA-4
†Holzman Tire & Auto Parts Co.—PEQTA-3

FALL RIVER
†W. W. Leach & Co.—PEQTA-6
†Wm. T. Manning Co.—PEQTA-3

FITCHBURG
†Motor Tire Service Co.—PEQTA-2

HOLYOKE
†J. Russell & Co., Inc.—PEQTA-4

LOWELL
†Towers Motor Parts Corp.—PEQTA-3

LYNN
†Essex Tire and Supply Co., Inc.—P-6

MALDEN
†Eastern Auto Parts Co., Inc.—PEQTA-9

PITTSFIELD
†May's Auto Parts, Inc.—PEQTA-2
†Jack Rose, Inc.—PEQTA-2

SPRINGFIELD
†Genden Brothers, Inc.—PEQTA-3
†Tarbell-Watters Co.—PEQTA-10

WORCESTER
†Christie & Thomson, Inc.—PEQTA-5
†City Auto Parts, Inc.—PEQTA-3
†Joseph Leavitt—PEQTA-4
†Lewis Automotive Equip. Co.—PEQTA-2
†Lyman Motor Parts Co.—PEQTA-2

MICHIGAN

ANN ARBOR
†Auto Parts Co., Inc.—PEQTA-3

BATTLE CREEK
†Hill Piston Service Co.—PEQTA-6

BAY CITY
†Northern Automotive Supply Co.—PEQTA-5
†Tyler-Lowery Co.—PEQTA-4

DETROIT
†Automobile Equipment Co.—PEQTA-14
†Automotive Parts Corp.—P-7
†Baldwin Auto Parts Co.—P-4
†Deluxe Motor Service, Inc.—PEQTA-4
†Motor Replacement Service, Inc.—PEA-2
†Piston Service Co.—PEQTA-4
†Robertson Rebabitting Service—PA-2
†Taylor Automotive Supply Co.—PEA-2
†Vernick Bros. Co.—PEQTA-5

FLINT
†Cumings Brothers—PEQTA-8
†Flint Automotive Parts Co.—PEQTA-1
†Flint Piston Service Co.—P-1
†Fornbrook Automotive Supply—PEQTA-4

GRAND RAPIDS
†Sherwood Hall Co., Ltd.—PEQTA-7
†Ver Wys & Co.—PEA-2

HANCOCK
†Exley Auto Parts—PEQA-2

JACKSON
†C. E. Hamlin Co.—PEQTA-5

KALAMAZOO
†Nusbaum Motor Supply Co.—PEQTA-4

LANSING
†Paul Automotive Parts Co.—PEQTA-2

MT. CLEMENS
†Macomb Motor Parts, Inc.—PEQTA-1

MT. PLEASANT
†Ben Traines Auto Parts—PEQA-1

MUSKEGON
†Muskegon Reliable Tire and Acc. Co.—PEQTA-9

PONTIAC
†Auto Electric Shop, Inc.—PEA-2
†Pontiac Motor Parts—P-1

PORT HURON
†Jack Buckley Motor Supply—PEQTA-1

SAGINAW
†General Distributing Corp.—PEQTA-14
†Saginaw Service Parts Co.—PT-2

STURGIS
†Sturgis Auto Supply Co.—PEQTA-2

TRAVERSE CITY
†Northern Auto Parts Co.—PEQTA-3

WYANDOTTE
†D. Mellin-Moran—PEQTA-2

MINNESOTA

DULUTH
†S. & S. Auto Parts Co.—PEQTA-4

MINNEAPOLIS
†Minneapolis Iron Store Co.—PQA-24
†National Bushing and Parts Co.—PEQTA-18
†J. E. Olen Co., Inc.—PEA-3
†Reinhard Brothers Co.—PEQTA-28
†Ritefit Auto Supply Co.—PEQTA-5
†Williams Hardware Co.—PEQTA-21

ST. PAUL
†Automotive Service Co.—PEQTA-4
†Nicols, Dean & Gregg—PEQTA-24
†Park Machine Co.—PEA-2
†Scheffer & Keesum Co.—PEQA-5
†Walters Bros. Auto Supply—PETA-3

MISSISSIPPI

COLUMBIA
†Hart Motor Co.—PEQA-2

Jobbers and Independents

Pulling Together For Profits



GREENWOOD
†D. & N. Auto Parts Co.—PEQTA-5

HATTIESBURG
†Central Electric Co.—PEQTA-5

JACKSON
†Capital City Welding & Mach. Works—P-1
†Noel's Auto Electric Service—PETA-2
†Robinson Brothers—PEQTA-4

LAUREL
†Christian Auto Supply Co.—PQTA-2

MERIDIAN
†Milton-Brooks Co., Inc.—PEQTA-6

VICKSBURG
†Waggner Auto Parts Co., Inc.—PEQTA-2

MISSOURI

CHILLICOTHE
†Chillicothe Auto Supply Co.—PEQTA-2

JOPLIN
†Joplin Auto Supply Co.—PEQTA-5
†Lewis Machine Co.—PEQTA-3
†Myers Motor Supply Co.—PEQTA-8

KANSAS CITY
†Auto Parts Distributing Co.—P-2
†Dayton Auto Parts Co.—P-1
†Equipment Company—PEQTA-14
†Faeth Co.—PEQTA-20
†General Auto Parts Co.—PEA-7
†Kansas City Automobile Sup. Co.—PEQTA-9
†Richards & Conover Hdw. Co.—PEQTA-75
†Stowe Hardware Supply Co.—PEQTA-35

KIRKSVILLE
†J. Burdman Auto Parts—PEQTA-2

ST. JOSEPH
†Ayers Auto Supply Co.—PQA-11

ST. LOUIS
†Authorized Motor Parts Corp.—P-3
†Automotive Equip. Supply Co.—PEQTA-9
†Auto Parts Co.—PEQTA-15
†Beck-Corbitt Co.—PEQTA-16
†Fred Campbell Auto Sup. Co.—PEQTA-14
†H. & H. Machine & Motor Parts Co.—PTA-4
†Kinn Auto Parts Co.—PEQTA-5
†Sligo Iron Store Co.—PEQTA-50
†Universal Parts and Service Co.—P-3

SEDALIA
†Hausam Co.—PEQTA-4

SPRINGFIELD
†Hermann-Brownlow Co.—PEQTA-6
†Ozark Motor and Supply Co.—PEQTA-8

MONTANA

BILLINGS
†Hines Motor Supply Co.—PEQTA-4
†Keete Auto Supply Co.—PEQTA-3
†Northwestern Auto Sup. Co., Inc.—PEQTA-4

BUTTE
†Dudley's Auto Parts—PEQTA-1
†Montana Hardware Co.—PEQTA-8

HAVRE
†Valley Motor Supply Co.—PEQA-3

NEBRASKA

BEATRICE
†De Luxe Parts Co.—PEQTA-4

FAIRBURY
†Fairbury Auto Parts Co.—PEQTA-2

GRAND ISLAND
†Red Rooster Sales Co.—PEQTA-5

HASTINGS
†W. M. Dutton & Sons Co.—PEQTA-21

LINCOLN
†Sidles Co.—PEQTA-28

McCOOK
†Shores Bros—PEQA-5

OMAHA
†Motor Parts Corp.—PEA-3
†Storz Supply Co.—PEQTA-10

YORK
†W. H. Bovey & Son—PEQTA-2

NEW HAMPSHIRE

CONCORD
†William S. Dunn—PEQTA-1
†Sanel Auto Parts—PEQTA-3

NEW JERSEY

ATLANTIC CITY
†Brighton Auto Supply Co.—PQTA-3
†LeBeck Sales Co.—PEQTA-4

CAMDEN
†Hagner, Inc.—PA-1
†Heimbach's Auto Supply House, Inc.—PEQTA-6

ELIZABETH
†Union County Auto Parts Co.—PEQTA-1

HOBOKEN
†Samuel Barnett Auto Parts, Inc.—PEQTA-4

MILLVILLE
†Tichenor Motor Parts Co., Inc.—PEQTA-3

NEWARK
†American Motor Specialties Co.—PEQTA-7
†Automotive Equipment Co., Inc.—PEQTA-14
†Clinton Sq. Auto Sup. Co., Inc.—PEQTA-8
†E. & L. Battery & Ignition Co., Inc.—PEQA-5
†Economy Auto Supply Co., Inc.—PEQTA-10
†Jarett Compressor & Equip. Co., Inc.—Q-7
†Mack Boring and Parts Co.—P-3

PATERSON
†Brink's Auto Parts Co.—PEQTA-3

RIDGEWOOD
†King Auto Parts, Inc.—PEQTA-5

TRENTON
†Charles Shick & Co.—PEQTA-3
†Ufert Auto Parts Service, Inc.—PEQTA-1

VINELAND
†Automotive Parts Co.—PTA-2
†Pagano Brothers, Inc.—PEQTA-2

NEW MEXICO

ALBUQUERQUE
†Motor Equipment Co.—PEQTA-2

SANTA FE
†Capital Auto Supply Co.—PEQA-2

NEW YORK

ALBANY
†Albany Hardware & Iron Co.—PEQTA-14
†Detroit Supply Co., Inc.—PEQTA-11
†E. V. Hoyt Corp.—PEQTA-5

BINGHAMTON
†United Auto Parts, Inc.—PEQTA-2
†Whipple's, Inc.—PEQTA-7

BROOKLYN
†Atlantic Auto Parts Co., Inc.—PEQTA-2
†Julius Bindrim—PEA-2
†Brooklyn Auto Parts Co., Inc.—P-3
†Consolidated Motor Parts, Inc.—PETA-12
†Embe Auto Parts, Inc.—PEQTA-4
†Eveready Motor Equip. Co., Inc.—PEQTA-10
†A. Jacoby & Sons, Inc.—PEQTA-3
†Ridgerton Auto Supply Co.—PEA-2

BUFFALO
†Angert Auto Parts Co., Inc.—PEQA-6
†Fleming Motor Parts, Inc.—PEQTA-3
†Joseph Strauss Co., Inc.—PEQTA-10
†H. D. Taylor Co.—PEQTA-8
†Unit Parts Corporation—PEQTA-12

A Directory of National Association Jobbers (Cont'd)

CORTLAND

†Corland Auto Supply Co., Inc.—PEQTA-4

ELMIRA

†Barker, Rose & Kimball, Inc.—PEQTA-4

FAR ROCKAWAY

†Quittner-Long Isl. Auto Parts Corp.—PEA-2

FLUSHING

†Bock-David, Inc.—P-
†North Shore Auto Parts Co., Inc. of
Flushing—PEQTA-4

ITHACA

†Ithaca Gear and Auto Parts Co., Inc.—
PEQTA-2

JAMESTOWN

†C. M. K. Auto Parts Corp.—PEQTA-2

KINGSTON

†A. F. King Co.—PEQTA-2

LONG ISLAND CITY

†A. T. Auto Parts—PETA-3

LYNBROOK

†South Shore Motive Parts Co., Inc.—
PEQTA-4

MINEOLA

†Walters Distributing Co., Inc.—PEQTA-6

MOUNT VERNON

†Globe Motorists Sup. Co., Inc.—PEQTA-12

NEWBURGH

†S. G. Kimball—PEQA-2

NEW YORK

†American Gear and Auto Parts Co., Inc.—
PETA-2

†Automobile Necessities Co.—PEQTA-8

†Bronx Gear and Bearing Co.—P-6

†Chadwick, Delamater Corp.—P-3

†Forshay Brothers—EQA-8

†Fuld & Fuld, Inc.—PEQTA-2

†G. & B. Motor Parts, Inc.—PA-5

†G. & H. Machine Co., Inc.—P-2

†J. E. Y. Motor Parts Co.—PEQTA-2

†Lehr Auto Supply Co., Inc.—PEQTA-34

†Lite Sales Corp.—PEQTA-5

†Manhattan Bearings & Sup. Co., Inc.—
PQTA-8

†W. E. Pruden Co., Inc.—PEQTA-20

†Sanders & Ruskin, Inc.—PEQTA-2

†M. Schaffer, Inc.—EQA-10

†Specialty Auto Parts Co.—PEQTA-4

†Wheels, Inc.—PEA-11

NORTH TONAWANDA

†Pirson Auto Parts, Inc.—PEQA-2

OSWEGO

†Automotive Sales Co.—PEQTA-3

PLATTSBURG

†M. P. Myers & Co., Inc.—PEQTA-5

†Plattsburg Motor Service—PEQTA-1

POUGHKEEPSIE

†Fred W. Barth, Inc.—PEQTA-2

ROCHESTER

†Chapin-Owen Co., Inc.—PEQTA-7

†Gordon Motor Parts, Inc.—PTA-2

†Rochester Cylinder Grinding Co.—PETA-2

STATEN ISLAND (Port Richmond)

†New York Motor Sup. Co., Inc.—PEQTA-5

SYRACUSE

†Olmsted Co., Inc.—PEQA-7

†Onondaga Auto Supply Co.—PEQTA-8

†Syracuse Auto Parts, Inc.—PEQTA-6

TROY

†H. A. McRae & Co., Inc.—PEQTA-4

UTICA

†Genesee Auto Supply Co., Inc.—PEQTA-5

†Utica Gear and Auto Parts Corp.—PE-3

NORTH CAROLINA

CHARLOTTE

†Carolinas Auto Supply House—PEQTA-8

†Charlotte Auto Parts Co.—PEQA-3

†Glasgow, Stewart & Co.—QTA-9

†Piedmont Auto Exchange, Inc.—PEQTA-6

†Southern Bearings & Parts Co.—PEQTA-9

FAYETTEVILLE

†Fayetteville Supply Co.—PQA-1

GASTONIA

†Moore & Stewart, Inc.—PEQTA-4

HICKORY

†Hickory Auto Parts, Inc.—PEQTA-4

KINSTON

†Kinston Auto Parts Co.—PEQ-2

LAURINBURG

†McLean Supply Co.—PEQTA-3

RALEIGH

†Motor Bearings and Parts Co.—PEQTA-7

STATESVILLE

†Auto Parts and Electric Co.—PE-4

WASHINGTON

†Paul Auto Supply Co.—PEQTA-3

WILMINGTON

†MacMillan & Cameron Co.—PEQA-3

WILSON

†Barnes Motor and Parts Co.—PEQTA-3

NORTH DAKOTA

BISMARCK

†Quanrud, Brink & Reibold, Inc.—PEQTA-3

MINOT

†Western Auto Parts Co.—PE-3

OHIO

AKRON

†Hardware & Supply Co.—PEQA-5

†Shriber-Schroth Co.—PEA-2

ASHTABULA

†Sanborn Motor Equipment—PEQTA-3

BRYAN

†Bryan Automotive Parts Co.—PEQTA-3

CAMBRIDGE

†Driggs Auto Parts—PEQA-4

CANTON

†Dine-DeWees Co.—PEQTA-12

†Ohio Battery and Ignition Co.—PEQTA-5

†Wolff's Auto Parts Co.—PET-1

CINCINNATI

†Buckeye Piston Service, Inc.—PET-3

†C. & D. Auto Sup. and Radio Corp.—QTA-6

†Dorman Automotive Parts—PEQA-5

†H. A. Sontag Co.—PETA-3

†Valley Automotive Parts—PEQA-32

CLEVELAND

†M. & M. Co.—PEQTA-12

†Penna. Rubber Supply Co.—PEQTA-32

COLUMBUS

†Automotive Parts Co.—PEA-32

DAYTON

†Genuine Parts Co.—PEQTA-5

†Lewis Motor Mart Co.—PEQTA-8

DEFIANCE

†Willey-Garman Co.—PEQTA-4

GALLIPOLIS

†G. & J. Auto Parts Co.—PEQA-1

HAMILTON

†Savage Auto Supply Co.—PEQTA-3

LIMA

†Siferd-Hossellman Co.—PEQTA-6

LORAIN

†Genuine Auto Parts, Inc.—PETA-2

MANSFIELD

†Automotive Supply Co.—PEQTA-2

PORTSMOUTH

†Valley Supply Co.—PEQA-3

SIDNEY

†Dunson Supply Co.—PEQTA-5

TOLEDO

†Huebner Supply Co.—EQA-4

†Motor Units, Inc.—PEQTA-4

†Union Supply Co.—PEQTA-8

YOUNGSTOWN

†E. E. Emery Co.—PEQTA-3

OKLAHOMA

CLINTON

†Sauter Bros. Parts Service—PEQTA-4

ENID

†Motor Supply Co.—PEQTA-15

OKLAHOMA CITY

†Brittain Brothers—PE-3

†Oklahoma City Hardware Co.—PEQTA-8

†Severin Tire and Supply Co.—PEQTA-12

†Sharp Auto Supply Co.—PEQTA-8

TULSA

†R. L. Hahn Auto Supply—PEQTA-4

†Haynes Auto Supply Co.—PEQTA-5

†Standard Parts Co.—PEQTA-3

OREGON

EUGENE

†Carlson, Hatten & Hay—PEQTA-3

†Nordling Parts Co.—PT-2

MEDFORD

†Littrell Parts Co.—PEQTA-2

PORTLAND

†Ballou & Wright—PEQTA-30

†W. E. Burns-Dan Burns, Inc.—PEQTA-8

†The Cronin Co.—PEQTA-9

†George Lawrence Co.—PEQTA-8

†Markworth Gear Co.—PETA-3

†Smith Auto Parts Co.—PEQA-8

†West Bearing Co.—PEQTA-8

†Wiggins Co., Inc.—PQTA-10

PENNSYLVANIA

ALLENTOWN

†Bee, Inc.—PQTA-11

†Gehring & Harlacher Co.—PEQTA-3

†E. T. Satchell Co.—PEQTA-4

ALTOONA

†Hannum's—PEQTA-3

BEAVER FALLS

†Reliable Motor Parts Co.—PEQTA-2

BEDFORD

†Brown Motor Supply Co.—PEQTA-2

BERWICK

†Dent's Motor Parts—PEQA-2

BRADFORD

†Crescent Auto Parts—PEQTA-4

BUTLER

†Hoffman Auto Parts—PEQT-2

CANONSBURG

†Canon Auto Parts—PEA-1

EASTON

†Way Bros.—PEQTA-3

ERIE

†Cohen Auto Parts Co.—PEQTA-6

†Richard B. Wolfe—P-2

GREENSBURG

†Air-Land Motor Parts Co., Inc.—PEQTA-3

HARRISBURG

†Harrisburg Auto Parts Co.—PEQTA-5

†George W. Myers—PEQTA-4

HAZLETON

†Automobile Supply Co.—PEQTA-3

†Empy Machine Co.—PEQTA-6

HUNTINGDON

†C. H. Miller Hardware Co.—PEQTA-4

INDIANA

†Auto Parts Co., Inc.—PEQTA-3

JOHNSTOWN

†Cambria Equipment Co.—PEQTA-5

KINGSTOWN

†Stull Bros.—EQA-2

LANCASTER

†Rosey's Auto Parts, Inc.—PEQTA-3

NEW CASTLE

†Elliot & Waddington—PEQTA-4

PHILADELPHIA

†American Gear Co.—PEQTA-3

†Auto Gear and Parts Co.—PEQTA-14

†Berrodin Auto Supply Co.—PEQTA-4

†Central Motor Parts Corp.—PEQTA-8

†Gaul, Derr & Shearer Co.—PEQTA-10

†Philadelphia Motor Accessories Co.—PQ-18

†Quaker City Motor Parts Co.—PEA-14

†E. P. Rotzell Co.—PEQTA-10

PITTSBURGH

†Motive Parts Co. of Penna.—PEQA-12

†Pittsburgh Auto Equip. Co.—PEQTA-34

†Superior Auto Accessories Co.—PEQTA-13

†Superior Motor Parts Co.—PEQTA-8

POTTSTOWN

†Nottle Auto Parts—PEQTA-2

POTTSVILLE

†Ost & Ost—PEA-5

READING

†Auto Parts Co.—PEQTA-4

†National Auto Supply Co.—PEQTA-3

†E. S. Youse Co., Inc.—PEQTA-6

SCRANTON

†Ackerson-Weinberg Co.—PEA-2

†K & K Auto Parts Co.—PEQTA-10

†D. G. Nicholas Co.—PQTA-7

†Charles B. Scott Co.—PEQTA-5

SOMERSET

†Sipe Auto Parts Co.—PEQTA-2

SUNBURY

†Big Boys Auto Parts Co.—PEQTA-3

†Sunbury Auto Parts—PEQTA-3

UNIONTOWN

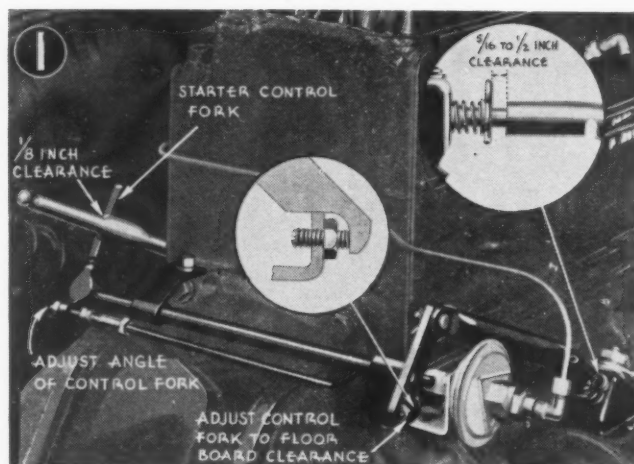
†Craig Motor Service Co.—PEQTA-3

WILKES BARRE

†Klein Auto Parts Co.—PEQTA-3

YORK

†Piperberg Auto-Parts Co.—PEQTA-2



The Big 4 of Starterator Service

The operation of Chevrolet's Starterator depends upon the proper setting of the linkage connecting the starting motor with the accelerator pedal. Four important points, and here they are.

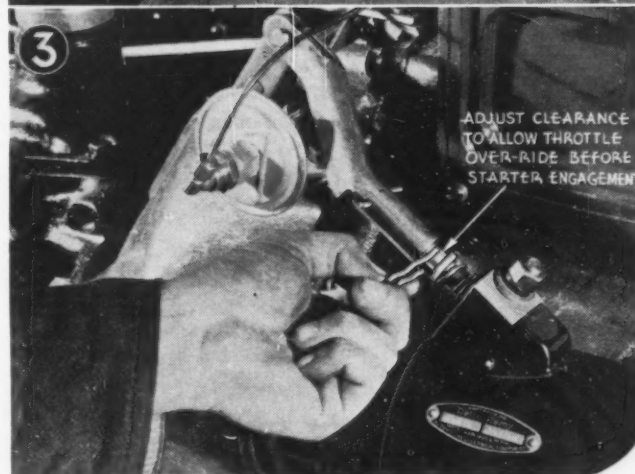
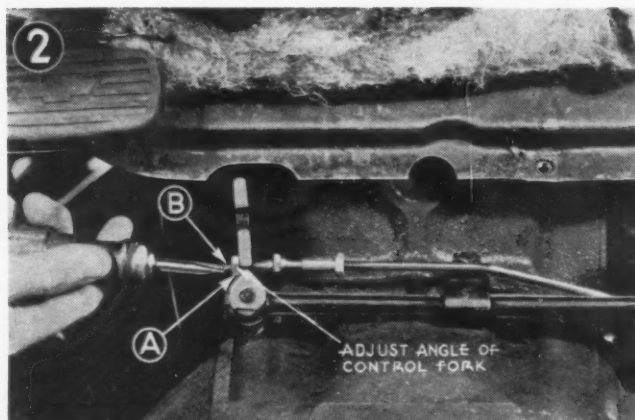
THE starting mechanism of the 1934, '35, '36 and '37 Chevrolet consists of the starting motor and switch, inter-connected with the accelerator pedal through a vacuum-controlled diaphragm and linkage. When the accelerator pedal is depressed, the linkage closes the starting motor switch, making contact with the starting motor and turning the engine over. When the engine fires, vacuum is created in the intake manifold. This vacuum acts upon the control diaphragm and disconnects the starter control, permitting the accelerator to operate only as a throttle.

Aside from the fact that the control diaphragm and the vacuum connections to the intake manifold must be in good condition to insure proper operation of the starter control, there are four very important adjustments to the starterator mechanism. When checking for trouble in this unit it is necessary to check all four of these adjustments because they are so closely related in their operation.

The first point to check is the clearance between the starter control fork and the under side of the floor board—specified clearance at this point is $\frac{1}{8}$ in. for all models prior to 1937, and $\frac{3}{4}$ in. for the 1937 models. A lock nut and an adjusting screw are provided for adjusting this clearance. (See circular inset in Fig. 1.)

To make sure that the starter control fork forms

Continued on page 36)



by
BOB HANKINSON

Starting Serial Number: Lansing, F 600,001; California, CF 504,001; Linden, LF, 545,001
3 7/16 in. bore x 4 1/8 in. stroke. Piston Dis. 229.7 cu. in. A.M.A. Hp. 28.4

Factory Hours from Oldsmobile Flat Rate Manual 1937

® IMPORTANT: Short cuts and footnotes. Read below before quoting prices

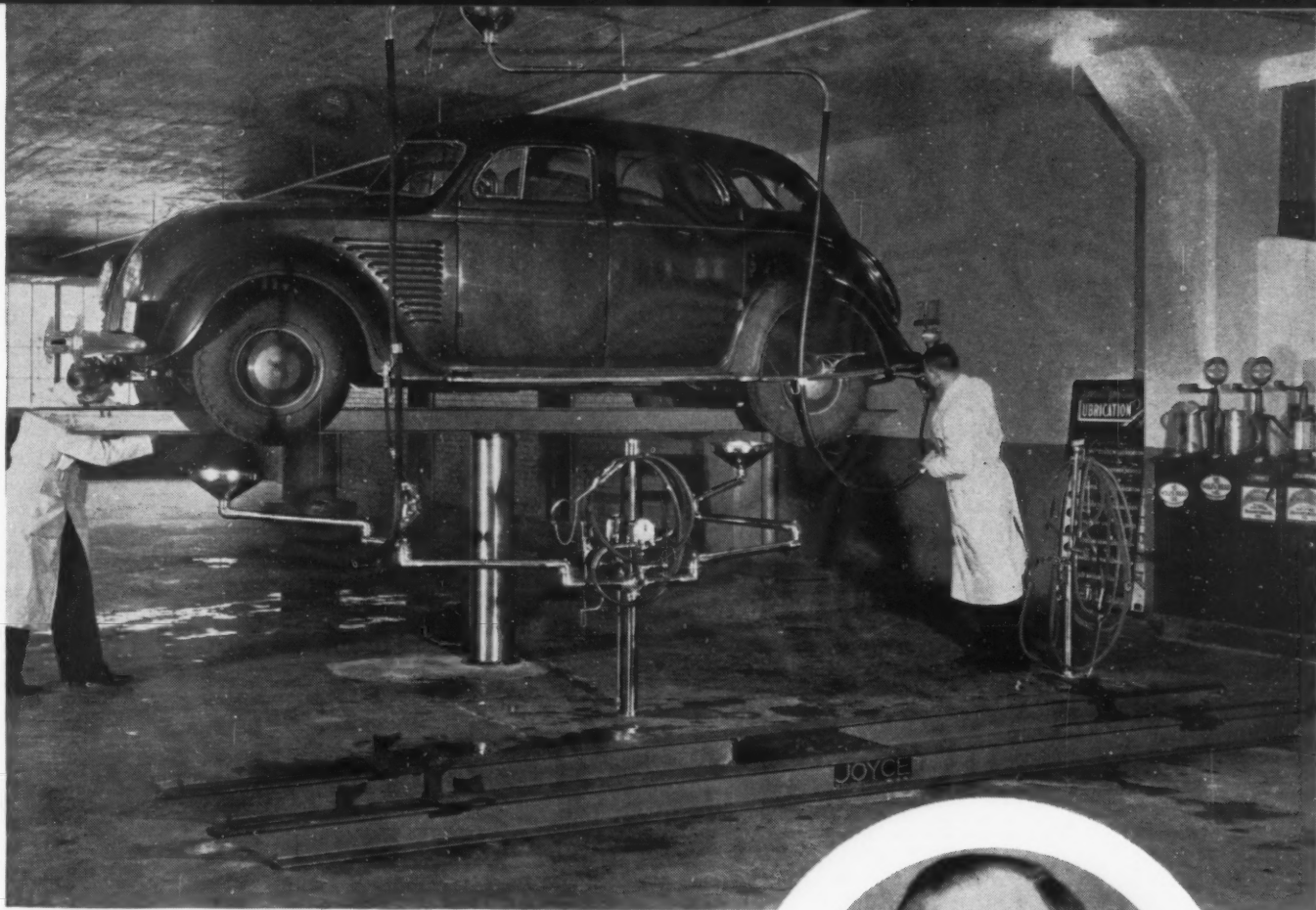
- ⓐ20**—Applies to shock absorber assembly.
ⓑ8c—Applies to hand brake cable.
ⓑ15—Applies to front drum only.
ⓓ11x—Applies to combination pump. Fuel pump only, \$2.75.
ⓕ3—Applies to block fitted with pistons, pins and rings.
ⓐ3, 4, 5, 8, 11, 14, 15—If equipped with automatic transmission, add \$2.00 to labor price.
ⓐ18—Necessary to remove oil pan to renew.
ⓑ1—If equipped with automatic transmission, add \$2.00 to labor price.
ⓓ18—Priced for headlamp wiring harness.
MANUFACTURER HOURS
ⓑ18, 19—Includes bleeding.
ⓑ1—Includes overhaul clutch.
ⓑ3—Alignment of rods not included.
ⓑ7—Includes align rod.
ⓑ8—Applies to crankshaft only.
ⓐ8—Does not include relling disk.
ⓑ4—Includes retine ignition.
ADDITIONAL OPERATIONS
 Overhaul automatic transmission, removed from car, 5.0 hours.
 Adjustment of servo bands—automatic transmission, 0.8 hour.
 Remove and replace automatic transmission clutch plates—unit removed from car, 3.5 hours.

MANUFACTURER HOURS

- [R] B18, 19—Includes bleeding.
 [R] E1—Includes overhaul clutch.
 [R] G3—Alignment of rods not included.
 [R] G7—Includes align rod.

TUNE-UP AND REPAIR DATA

- Main Bearings:** Steel backed babbitt. Renewable from below.
- Rod Bearings:** Steel backed babbitt, removable shells. Rod and piston assemblies are removed from above.
- Tappet Clearance:** Inlet .008 in. Exh. .011 in. Hot.
- Valve Timing:** With inlet tappet set to .008 in. valve opens 5 deg. or 2 flywheel teeth before T.C. With exhaust tappet set to .011 in. Exh. closes 5 deg., or 2 flywheel teeth after T.C. Marks on cam and crankshaft sprockets should be nearest each other and on line between shaft centers.
- Ignition Timing:** Full automatic advance. Spark occurs at T.C., or when the steel ball in flywheel face lines up with pointer.
- Timing Hole Location:** Left side of flywheel housing, between starter and block.
- Seat Angle of Valves:** Inlet 30 degrees. Exhaust 45 degrees.
- Car Serial Number Located:** Left frame side member, under hood.
- Interrupter Point Gap:** .020 in.
- Spark Plugs:** Std. A.C. 45. Set to 0.40 in.
- Firing Order:** 1-5-3-6-2-4.
- Number of Flywheel Teeth:** 145.
- Brake Make, and Drum Diam.:** Bendix hydraulic, 11 in.
- Brake Lining Total Length:** Front 3 ft. 6 1/2 in. x 1 1/2 in. x 3/16 in. Rear: Same. Hand: Uses rear service shoes.
- Oil Capacity, Crankcase in Qts.:** 6.
- Transmission Oil, Lbs. or Pts.:** 2.
- Differential Oil, Lbs. or Pts.:** 2 1/2.
- Automatic Transmission Oil, Lbs. or Pts.:** 7.
- Cooling System Capacity:** 17 qts.
- Oil Pressure:** 28 to 33 lbs. Adjustment located in oil pump.
- Compression Gage Pressure:** 146 lbs. at 1000 r.p.m. Ratio 6.1 to 1.
- Generator Rate Adjustment:** Voltage regulator.
- Steering Gear Adjustment:** Saginaw worm and roller, straddle mounted.
- Carburetor:** Standard transmission Carter 388-s. Automatic transmission Carter 388-s.
- Clutch:** Borg and Beck.
- Universal Joints:** Mechanics' needle bearing.
- Battery Terminal Grounded:** Negative.



THE READERS' CLEARING HOUSE

of

Service Men's Queries

A LETTER FROM

TOM GLUCK

It is not very often that I can find the time from a service manager's duties to answer open letters. Mr. W. C. Condit's letter in the June, 1938, issue of *MOTOR AGE*, in which he criticizes your previous article, "Performance Requires Perfect Timing," and advocates the use of regular or second-grade gasoline for the most economical operation of a present-day motor car, calls for a most emphatic reply.

You are absolutely right. Good performance calls for "perfect timing." The most practical method developed up to date is a meter that fastens to the steering post and registers acceleration on the road accurately. This instrument is manufactured by several companies.

I have been in the automobile repair business for 30 years; 10 years as a mechanic and 20 years as a service manager. In all this time I have never seen anything

quite so confusing to owners and most tune-up men, as the timing and fuel question. We have the factory sales departments and the fuel companies trying to educate the motoring public to the use of second and third grades of fuel through their advertising and specifications. On the other hand, we have the mechanics and tune-up men desperately trying to make our present-day engines operate with the effortless ease and snap as advertised by the manufacturer on these fuels.

In servicing any present-day high compression engine, all service managers and tune-up men are faced with a serious problem; what to do about detonation or ping.

Most of us should know by this time unless Ethyl gasoline is used exclusively, we cannot guarantee to keep an owner out of our shops for over two or three thousand miles at a time.

If any of the present-day engines are tuned to peak performance with regular gasoline a ping will develop in a few

(Continued on next page)

BILL TOBOLDT, Editor of *MOTOR AGE*, conducts the Readers' Clearing House. He presents some of the thousands of questions asked by readers of *MOTOR AGE* together with a practical analysis of the difficulties in his replies. You, too, are cordially invited to send us your problems.

thousand miles. If the spark is timed to a point that will anticipate this difficulty, the owner will complain of a flat spot, poor acceleration, poor gas mileage, overheating, and in some cases vapor lock.

When regular gasoline is used, a great many tune-up men set the spark a little later each time an owner complains about ping, until it is set so late that a power, acceleration, or gas mileage complaint results. He then removes the carbon and starts all over again. So, the endless round of adjustment, complaint, and adjustment, goes on, until the service department is worn out, the owner is worn out, or another make of car is purchased in the vain hope that this futile and exasperating condition can be avoided. Then some smart tune-up man tells the owner the truth about fuels and engines, and wins his undying gratitude and future business.

Any car purchased today, regardless of make or model, is in reality three separate and distinct cars. Depending on the fuel used, the following results can be expected:

First—Using Ethyl gasoline any car can be an exceptional performer and cost a minimum amount of money for repairs and adjustments.

Second—Using regular gasoline slightly treated with tetra-ethyl lead, any car can be a mediocre performer and cost a moderate amount of money for repairs and adjustments.

Third—Using third-grade gasoline, any car can be a poor performer and cost a maximum amount of money for repairs and adjustments.

I have made quite a study of this situation for the past five years and informed owners frankly just what could be expected. The results were astonishing and far beyond my expectations.

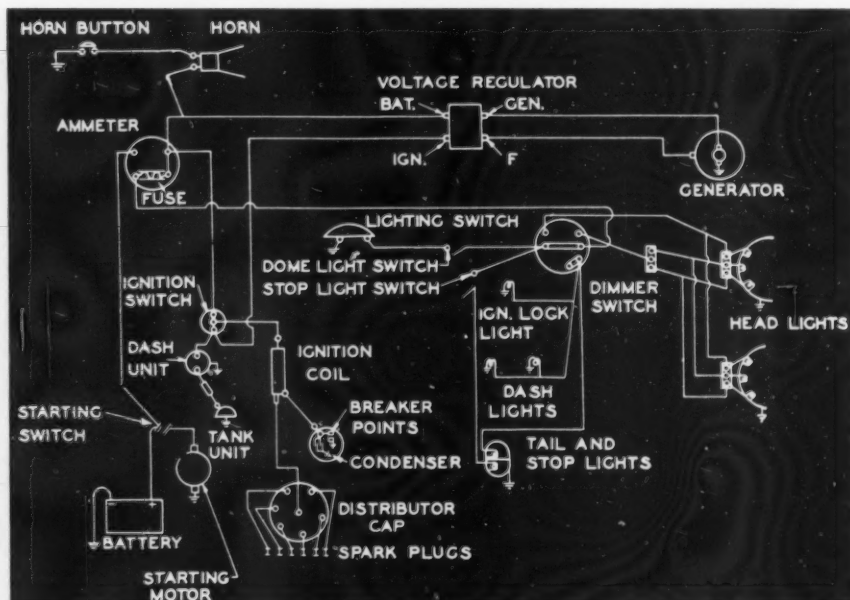
Since 1932, of the cars regularly serviced in our shop, only two engines have had the piston rings replaced under 75,000 miles. We have yet to remove the crankcase on the first 1933 engine of either of the two makes of cars handled by the company. We do not even solicit valve grinds under 20,000 miles and quite a few owners go 50,000 miles before grinding valves.

Many service managers have discussed this point about fuel with their respective factory engineers. They always agree with us verbally, but still print in the owner's manual the statement that, "If lower grade fuel is used, readjust the octane selector to a point best suited to the fuel in use." Nothing, however, is said about the resulting loss of power, gas mileage, acceleration, yes, and even crystallized connecting rod bearings, sticky and burned valves, and much faster cylinder wear.

Most service managers have been instructed by the sales department not to tell owners that their cars will operate better on Ethyl gasoline. All the literature that comes from the factory clearly states, or at least implies that the use of any particular grade of gasoline is not necessary.

Remember that the make of car or the mechanic is always blamed for poor performance and very rarely the fuel.

Under date of March 13, 1937, I wrote the Buick factory asking them to commit themselves on the fuel question. Allow me to quote from the answering letter signed by Mr. C. W. Jacobs, parts and service manager: "It is a general con-



1938 Chevrolet Wiring Diagram

sensus of opinion by all service men and engineers that our present high compression engines will operate much more satisfactorily and, in the long run, more economically with Ethyl gas than with other gases which cause a constant spark knock under accelerating conditions. We do not know that we can state with authority that ordinary or regular gas will actually cause excessive mechanical repairs; however, it will be conceded that the maintenance of trying to eliminate spark rap may cause an owner additional expense through more frequent motor tune-ups and carbon removal."

There is no doubt that the real reason that Mr. Condit and his associate mechanics did not use Ethyl gasoline in their own cars is because the tests that the engineers in charge were conducting were primarily designed to justify their particular engine and discredit the need of Ethyl gasoline. They probably made the same mistake that most owners do, of trying to get the best results out of Ethyl gasoline without changing the adjustment of the spark timing, and in most cases the jets in the carburetor. If Ethyl Gasoline is put in the tank of any car without making the necessary adjustments there will be very little if any difference. On the other hand, if these adjustments are made correctly, there is a decided difference in acceleration, power and top speed. Had they had the opportunity to follow the record of an Ethyl fueled car for a period of 75,000 miles, as against the same make of car driven on regular fuel, they undoubtedly would have reversed their practices.

All of the mechanics that work in our shop, after witnessing the very good results of our owners' cars, use nothing but

Ethyl in their own cars. I can also furnish Mr. Condit with the correct names of about 500 owners, 75 service managers, 50 salesmen, and 100 mechanics that have proved that it is more economical and certainly more satisfying to use the best fuel in the long run.

In a recent trip out calling on some of my old friends, I was a little surprised to find quite a few of them almost in despair about the question of fuel and timing. I decided to see if something could be done about it. In two and a half days 57 service managers, representing every make of car sold in this country, signed a petition asking their respective factories to clearly qualify fuels in their literature, instructions, and advertising. The lack of time and money forced me to drop the matter at that point.

I am so sorry that tetra-ethyl lead is controlled by one company and can't be picked off bushes or grown in the garden. If such were the case, the direct interests of the fuel companies would not have clouded the issue, and the situation would have been cleared up long ago. But, why kid ourselves any longer? Practically all of the gasoline for sale in this country must have some tetra-ethyl lead in it before it can be used to advantage even in the older cars.

After reading this letter, it would seem to any repair man that if he followed the above procedure he would work himself out of many carbon, valve, and ring jobs. The fact of the matter is he does do just that thing. The kind of repair work simply changes from now and then a lone job involving considerable money to repeated maintenance work from the same customer. Following this plan closely, our shop took in more customer pay labor per \$1,000 worth of new cars sold than any like dealership in southern California.

If the independent repair shop would look into this matter and follow this procedure closely, they would have tune-up jobs come to them in ever increasing numbers that are now being done poorly by the dealer repair shops because of anti-Ethyl instructions from the sales departments.

In closing, let me say that the smart tune-up man will take advantage of the best fuel for the best and most economical performance. Customers like it and will continue to come back and give you all of their business.

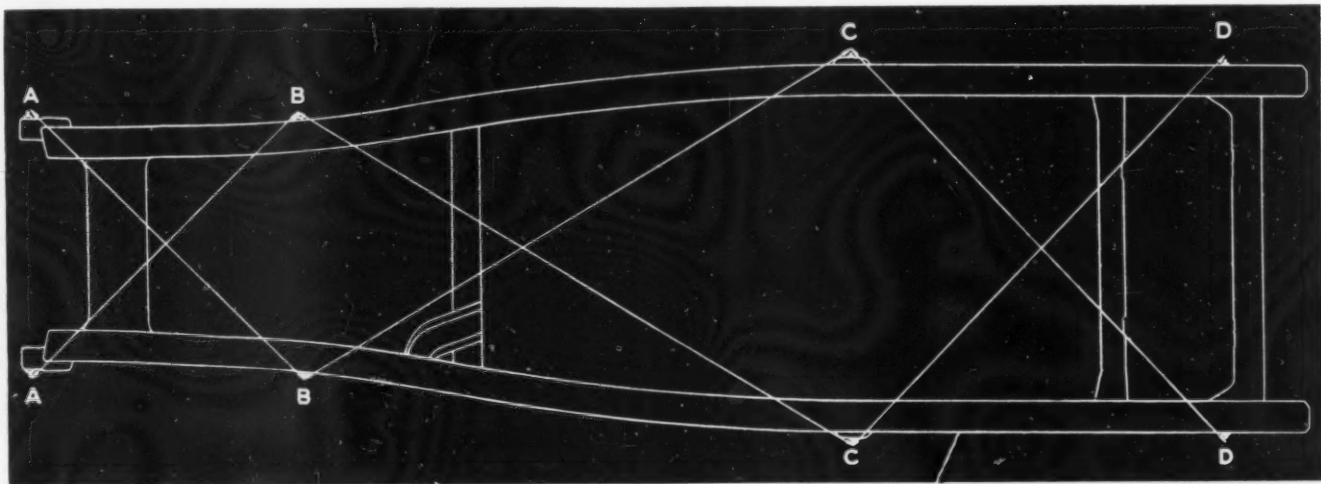
VIBRATES

I have a Chrysler Royal, Model C-16, 1937. From 30 to 41 miles per hour there is a vibration in the engine. After that it smooths out and runs perfect. By disconnecting the automatic spark advance, it appears to run smoother.

I put in new spark plugs, cleaned



"Do you think seeing 'Snow White' could have anything to do with it?"



Dimensions to check when checking frame alignment on 1938 Chevrolet

carburetor, checked timing with timing lamp. Everything seems perfect but it does not run good. What do you think is the solution? Harrod Garage, 243 S. 6th St., Wood River, Ill.

THERE are two things you should look for in this job, the first is worn universal joint pins and the second—loose engine mountings.

There are little springs and buttons on the ends of the universal joint pins which are intended to hold the pins in place. I understand that these little springs have a habit of breaking and thus allow the pins to shift end-wise in the joint. This throws the joint out of balance with the result that you have a periodic vibration at certain car speeds. If you find these pins to be loose, it is sometimes possible to correct this vibration condition by installing new caps and springs. In other cases, it is necessary to overhaul the universal joint or perhaps replace it with a new one.

Loose engine mountings will likewise give a vibration period and it would be well for you to check over the mountings on this job to be sure that they are properly adjusted.

HIGH SPEED SHIMMY

Regarding a Chrysler Imperial 80 CH late 1932, I would like to know how to stop this car from shimmying. It shimmies most at high speeds—at 60 or 70 m.p.h.—although it can be felt slightly at slow speed. I checked it with a caster and camber gage and found left wheel to be only $\frac{1}{2}$ deg.

When steering wheel is turned you can notice the axle assembly move. Everything else seems O. K. I. S. Harwell, Harwell's Garage, 1326 Newton Street, Akron, Ohio.

THE first thing I would check on your Imperial Chrysler Eight which has a high-speed shimmy would be the balance of the front wheels and the condition of the shock absorbers. Be sure that the shock absorbers are O. K. and filled with the proper kind of fluid and also make sure that the

wheels are in correct balance as checked on a dynamic type balancer.

In connection with balancing, it might pay you to first be sure that the tires do not have any blow-out patches in them and that they are both worn about equally.

I don't quite know what you mean when you say that you can see the axle assembly move when the steering wheel is turned. I think you better check over the U-bolts making sure that they are tight and that you don't have any broken spring leaves and that the shackles are not worn.

Of course the caster, camber and toe-in have to be right also but I am quite sure that you will find the main difficulty in springs, shock absorbers or wheel balancing.

TRUCK TROUBLES

We are experiencing trouble with a Model 52 White truck that has a G.R.B. engine. A short while ago the engine was overhauled, the crankshaft was reground, new mains and rod bearings were installed, the cylinder block was re-bored to .060 in. oversize and fitted with cast iron pistons. The governor was set at 1750 r.p.m. The oil pressure was 15 lb. idling to 25 lb. at high speed and the cooling system was good.

This job ran 2,000 miles and then seized. When taken apart number 4 cylinder was found seized. It was honed out and new pistons and rings were fitted on the others. The clearances were checked. The truck made one load and number 1 piston seized. Since we noted the cylinder walls were dry, we honed out all the cylinders, cleaned every oil passage, installed a new oil pump, renewed oil by-pass springs and plunger and we cut notches on side of connecting rod bearings to insure plenty of splash to the cylinder walls. The oil pressure was then regulated to 30 lb. idling, the crankcase was filled with two extra gallons of oil and after running in about 14 hours without making a trip, the engine seized again.

I have been in the auto repair business for about 18 years, eight of these with the White Truck Company. I spent three years re-building G.R.B. engines and am convinced the main bearings on this job are not right. But the machine shop that did the job at the beginning has convinced the owner of the truck that this is impossible. What is your opinion? L. Simelius, 1418 Zerega Ave., the Bronx, N. Y.

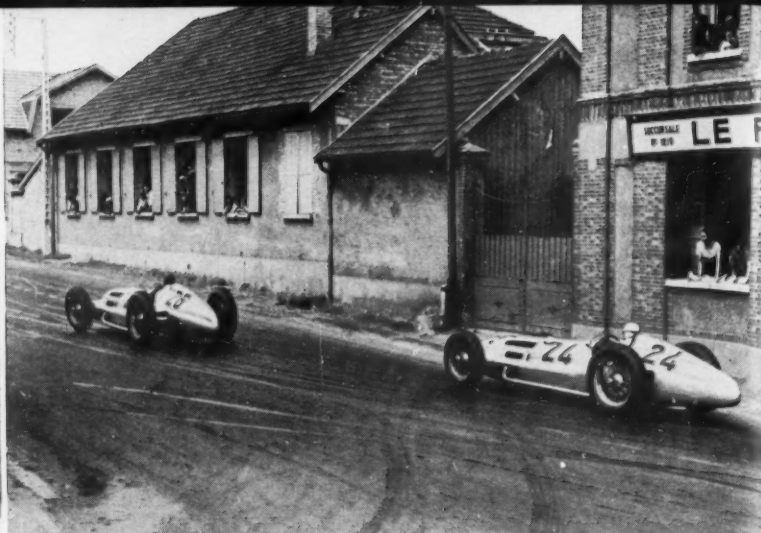
ON your G.R.B. White engine that continues to seize, I am inclined to believe that the cylinders are distorted. This distortion may be caused either by clogged water jackets or by unequal tension on the cylinder head stud. Such a condition is, of course, aggravated by the fact that the block has been rebored to .060 inch oversize.

I would suggest that you thoroughly scrape out all the accumulated rust from the water jacket and also use a torque wrench when tightening the cylinder head studs.

If this does not overcome your trouble, I would suggest that you use a set of sleeves in the cylinders. I do not think your trouble is in the main bearings.



"He knows every road in the country by heart!"



Over Here (upper left) John Cobb's car has been brought to this country preparatory to his speed trials the latter part of this month. Here is Cobb in the pilot's seat of his 1,250 h.p. chariot.

Grandstand (upper right) A fine seat for the 1938 Grand Prix in Germany was the lot of factory workers who had only to look up from their work to watch Brauchitsch and Caracciola whiz by in their Mercedes cars.

Tagged (left) A revival of enthusiasm for checking license tags should be noticed among Atlantic City, N. J., officers under a new ordinance which requires cyclists to be licensed.



C.S.R.A. and A.A.A. May Have Racing "Working Agreement"

Associations Discuss Arrangements for Mutual Race Sanctions

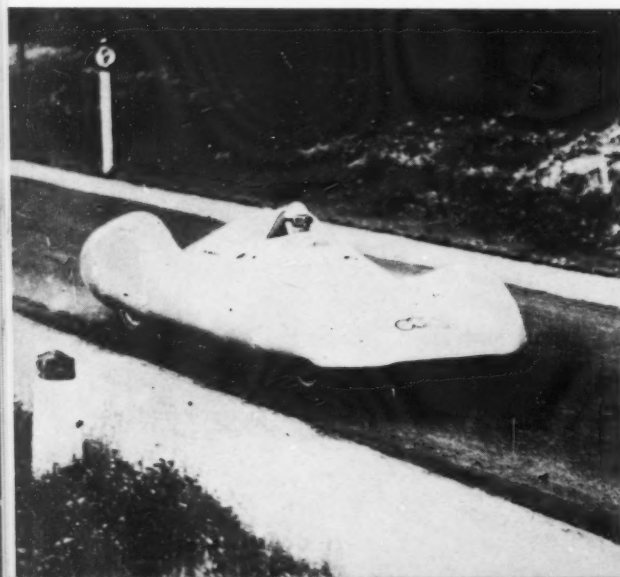
Operations of two of automobile racing's sanctioning bodies were to be extended under plans for an interchange agreement discussed for some time.

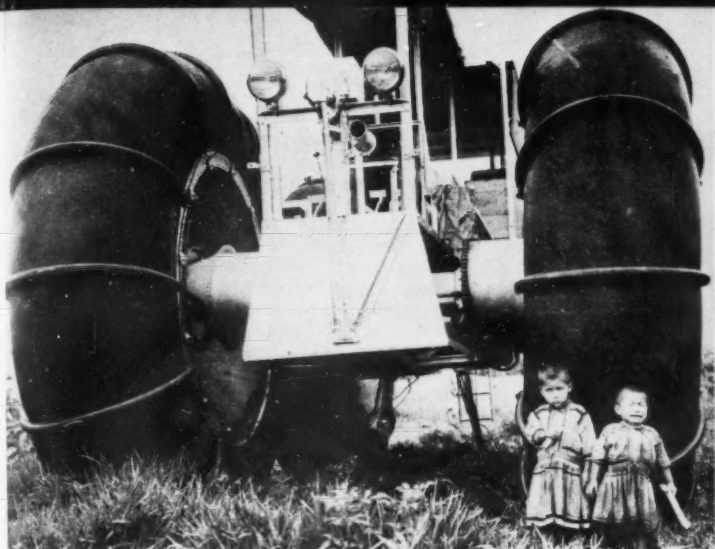
While an official report was not yet issued, it was said by representatives of the American Automobile Association Contest Board and the Central States Racing Association that they "talked over" details of a proposed working agreement.

Under the agreement, the drivers registered with the AAA would be permitted to compete in races sanctioned by the CSRA and the CSRA pilots would be accepted to AAA competition. The agreement would extend the AAA supervision into the mid-west where the automobile association has been inactive in racing competition in recent years except for the major dirt track events at Cook
(Continued on page 42)

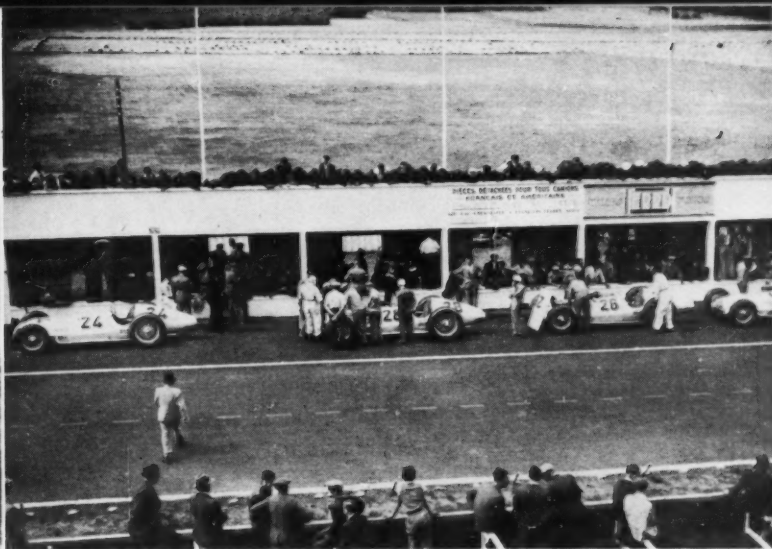
New Auto-Union This newly constructed Auto-Union racer had its first test in the recent French Grand Prix. The car was built under new rules governing construction of racing cars which reduced the number of cylinders from 16 to 12.

Nipped in the Bud A plan to dodge New York's anti-betting laws by selling "shares" in cars' earnings at a mid-gate track was squashed when the Nassau county, L. I., district attorney hauled the promoters before the grand jury. The first known case of betting on auto races.



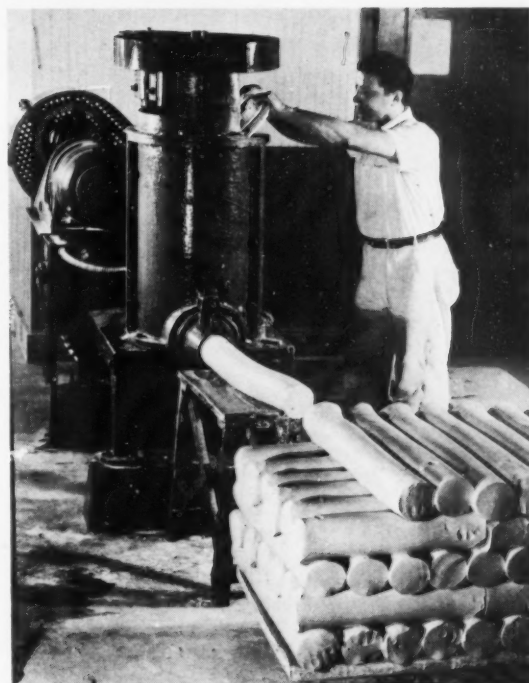


Buggy (upper left) Unusual appearance of this "swamp buggy" seems to have frightened one of the Seminole Indian boys. The vehicle is used in Florida by oil prospectors for traveling on land, water or mud.



Quadruplets (upper right) Four new Mercedes cars shown at the pits at the Reims track during the Grand Prix of the Automobile Club of France.

Bologna (right) Not a "boloney" machine, but one of the first steps in the production of spark plugs at the Auto-Lite plant. The white rolls are raw, unformed "Ziramic" insulator dough which, after being aged in vaults, is made into insulator cores for Auto-Lite plugs.



Hope for A.A.A. Sanction of Syracuse Race

Wilbur Shaw May Have 'Long-Shot' Chance at Title

With the annual national championship auto race at Syracuse, N. Y., still off the official schedule, big league competition was "locked up" in the garages as MOTOR AGE went to press.

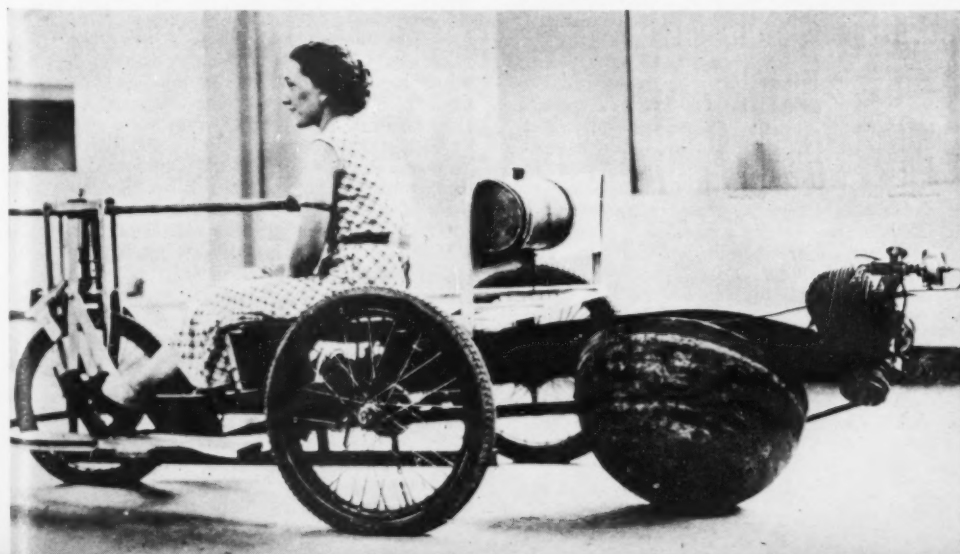
While drivers and car owners hoped for early solution of difficulties between New York State Fair management and the American Automobile Association's Contest Board, the governing body of the sport had not yet placed the race back on its roster.

The title event, originally carded for Sept. 10, was cancelled by the AAA because of a reported infraction of rules. The Fair management is said to have allowed an "outlaw" race to be run on its mile track on July 3. Sanction by the International Motor Contest Association—rival sanctioning body—was in violation of the AAA rule which restricts tracks to events supervised by AAA officials.

(Continued on page 38)

Mixing-Bowl What appears to be a large mixing-bowl at the rear of this novel vehicle built by a French inventor is really the drive wheel. The inventor claims this device permits the car to be brought to a sudden stop without brakes and to turn within its length.

Half-Putt Cycle A Berlin engineer built this tiny motorcycle, claimed to be the world's smallest, for his young son. It is said to be mechanically excellent and to run just as well as its "big brothers." Needless to say, Junior is not allowed to handle it alone.





Judges O. H. Cilley, assistant general manager of the United States Asbestos division of Raybestos-Manhattan, Inc., greets the judges of the recent Grey-Rock contest as they arrived to determine the winners. Shown left to right are W. K. Toboldt, editor of Motor Age, Edward S. Babcox, publisher of Brake Service Magazine, F. A. Miller, Grey-Rock's sales manager, and O. H. Cilley.

Winners Picked in \$5,000 Grey-Rock Contest

Winners of cash and prize awards in the \$5,000 contest sponsored by the United States Asbestos division of Raybestos-Manhattan, Inc., have been announced. First prize of \$1,000 cash was awarded for the best explanation in 50 words of "Why Grey-Rock is the fastest growing line." First prize was awarded to Oscar H. Brehob, Eddie Brehob Service, Indianapolis. Second prize, \$500, was awarded to W. K. Belknap, C. E. Hull & Son Motor Co., Stillwater, Okla. Third and fourth prizes, \$100 each, were awarded to Frank Schroff, Schroff Bros., Washington, D. C., and Harry B. Hills, H. B. Hills Garage, Los Angeles.

Fifth, sixth and seventh places, with prizes of \$50 each, were taken by David Shollenberger, Fenstermacher & Rems Co., Allentown, Penna.; Russell E. Boyer, Burkhardt's Brewing Co., Akron, Ohio, and Henri Gauthier, Garage Marieville, Marieville, Canada.

The next four places carrying awards of \$25 each were won by Charles F. Ruland, Commonwealth Auto Co., Brooklyn, N. Y.; Frank S. Evans, Hadley-Evans & Cook, Everett, Wash.; Leon Follansbee, Follansbee's Garage, Sandown, N. H.; and W. J. Sheehan, Sheehan's Service, St. Petersburg, Fla.

In addition to the above prizes there were awards of 75 brakeometers and 50 prizes of five dollars in cash.

Russo Leads in Midget Listing

Paul Russo loomed as the first champion of midget racing in the latest point list released by the Contest Board of the American Automobile Association.

Hurling his lead over the 200-margin, Russo was credited with 1312 points for victories in tiny car races, particularly in the New York circuit.

With "Red" Redmond shoved into fourth place from his former runner-

up listing, Ernie Gessell, former big car driver, was in second position. He had 1108 points. Third was Ed Stanek, another big car driver who has taken to the midgets, who is listed for 1102 points. Redmond has 972 credits.

The AAA Contest Board reports it is still considering a possible site for a National Championship classic for the doodlebugs.

The latest addition to the rapidly growing midget circuit was the track at West Philadelphia, which opened its card on July 23.

Other drivers on the midget points list, in their order, were: Tommy Hinnershitz, 862 points; Frank Bailey, 767; M. Bower, 758; Bill Morrissey, 713; Bill Holmes, 673; "Shorty" Sorrenson, 506; Bill Schindler, 437; Bob Sall, 409; Henry Banks, 382; Hal Burdette, 378; Art Vreeland, 374; Johnny Ritter, 367; Bill Holland, 343; Mike Josephs, 307; George Rice, 296; Tony Bettenhausen, 290.

Wet Bonneville Course Delays Speed Trials

With a wet Bonneville Saltbed course removing possibilities of peak automobile records in July, officials of the AAA Contest Board prepared to crowd "several" new world land speeds into the August schedule.

Captain George E. T. Eyston, who established a new record of 311.42 miles per hour at Bonneville last Nov. 19, was forced to postpone his first trial of the current "carnival of speed" which was earlier listed for July 18. The salt had not dried out sufficiently to allow a safe test of his giant "Thunderbolt" racer.

At the northwestern Utah salt flat, it was said that Eyston would get away on his record run "at the first opportunity" and that he hoped to establish a mark of 330 miles per hour before returning to his native England.

When he docked earlier in the month at New York on the Queen Mary, Eyston had said:

"It will be a good mark—provided I don't make a mark in the salt."

The delay forced on Captain Eyston by the weatherman presented a problem for Art Pillsbury and his staff of AAA Contest Board officials.

Willys Reduces Prices On Passenger Car Models

Price reductions as high as \$26 on the Standard Coupe, and ranging throughout the line, have been announced by Willys-Overland Motors, Inc., to cover current and future production of 1938 cars at the factory and to be immediately available on all Willys passenger cars in dealer stocks throughout the country.

The new prices bring the price of the Willys standard coupe model, delivered at Toledo, but not including Federal or State taxes down to \$499, the lowest coupe price ever offered on current Willys coupe production.

The sedan models are substantially reduced with a \$10 price cut made on the popular deluxe four-door sedan.

Woods Leaves Auto-Lite

J. W. Woods has resigned as sales promotion manager of the Electric Auto-Lite Company of Toledo to become assistant to the president of O. R. French and Associates, St. Louis advertising agency.

Mr. Woods has been identified with advertising and promotion in the automotive field principally for the past ten years. He has been advertising manager of the old Stromberg Motor Devices Co., western manager for Automotive Merchandising at Chicago, general manager of the French Agency and advertising manager of the Sunnen Products Company of St. Louis.



When the schedule for the speed carnival was compiled earlier in the year, Eyston's fellow countryman, John Cobb, was listed for an official attempt at the record on Aug. 21. Cobb's newest creation of the super-speed realm—his turtle-shaped racer—arrived in New York aboard the S.S. Georgic in mid-July and was immediately shipped to Salt Lake City, Utah.

Now the race officials admit that they are "somewhat worried" over the fact that Eyston's attempts to reach what he believes the present peak of his "Thunderbolt" may carry over to the dates reserved for Cobb.

Also contributing to the possibilities of a crowded schedule are the persistent reports that Ab Jenkins, America's No. 1 distance record holder, will come forth any day now with official verification of plans for a super-speed record assault this fall.

Although Jenkins has not yet made application for sanction of a run to the American Automobile Association's Contest Board offices at headquarters in Washington, D. C., the calendar is being kept open in the event he still comes through.

It is said in numerous quarters that Jenkins is rushing completion of a record car at Indianapolis. But verification has so far been curtailed in view of the secrecy attending super-speed attempts of recent years.

Jenkins recently told *MOTOR AGE*:

"I'm going after the world land record if it is at all possible for me to work out the plans I have in mind for building a car capable of the speed necessary."

This information may be accepted as meaning that Jenkins may be a late season candidate for the world speed title. For it is certain that the nation's front ranking record holder won't schedule his trial until he is reasonably sure that weather conditions and mechanical perfection are in harmony with a successful attempt. This Jenkins attitude is characteristic of the speed ace's thoroughness which dates back to his first speed mark of 1926.

Because of limitations of the high priced timing equipment available and the thoroughness of supervision necessary for world-wide recognition of super-speed records, only one driver may bid for the mark at one time. This, despite the great expanse of the Bonneville saltbed which would allow mapping out of several courses.

Record trials are run over a course 13 miles long which was surveyed by AAA officials in 1935 when Sir Malcolm Campbell, now retired, established his record of 301.1292 miles per hour. Two such courses—one for emergency use—have been established. All along the course have been placed timing "traps" which connect with the main clocking tower and record the speeds at various mile posts along the course. Records allowed in the runs are the one kilometer, one mile, 5 kilometer and 5 miles and ten kilometer and ten miles.

The adverse weather which blocked Eyston's scheduled mid-July attempt was not a surprise to officials, some of whom wondered at the early date scheduled by Eyston. It is not usually until August that the salt surface dries out sufficiently to provide a concrete-like surface paving the way for peak speeds.

Records of past years at Bonneville have for the most part been staged after early August. While some distance marks are on the records book for July of former years, peak speeds were attained in August, September, October—and even November.

When Sir Malcolm Campbell attained the first 300 miles per hour gait ever recorded, he roared over the salt flat in early September. The only other super-speed record established there was in November, by Eyston.

Bantam Offers Three New Car Models

Three new models, a 4-passenger touring, a station wagon and a commercial unit, the Boulevard Delivery, have been announced by the American Bantam Car Co., Butler, Pa., in the second series Bantam "60."

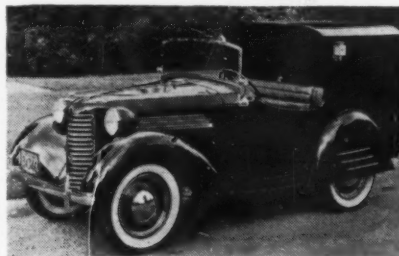
The Foursome is frankly patterned after the smart small European cars popular on the Continent. The station wagon body is of polished maple. Its



New Wrinkle for towing trucks was this set-up devised by a garage man in PeEll, Wash. An old auto engine replaces the hand-winch and drum for hauling cars out of ditches. Gear shift on the old motor regulates the speed in hauling. He claims it is easier and much faster.

top is curved for ample headroom and the rear seat is removable.

The Boulevard Delivery, illustrated here, is designed as a delivery vehicle



for smart shops. The driver's compartment is open with a snap top provided for protection against inclement weather. The package compartment is accessible from the driver's seat through a sliding vertical door equipped with an automatic, theft-proof lock.

Arrow Has New Fog Light

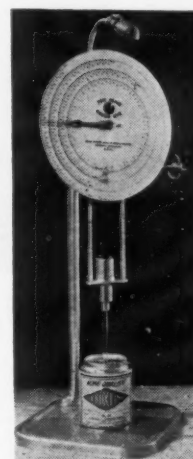
Arrow Safety Device Co., Inc., Medford, N. J., has announced a new fog light. It is supplied in either black enamel or full chrome finish, and is equipped with a rugged bracket and jaw-type mounting clamp. A specially designed lens and silver plate reflector throws a controlled beam of light far ahead and down along the road. Prices, black enamel finish—\$4.50;



Karl M. Yost

Karl M. Yost, engineer in charge of the truck and bus brake division of the Bendix Products Corp., has joined the staff of the Wagner Electric Brake Manufacturing Co. as consulting engineer.

Light Beam Principle in Color Mixing Device



The principle of interrupting a beam of light to make precision measurements has been put to a new use according to J. W. Strain, director of sales of the Acme White Lead and Color Works.

In commenting on a new precision instrument for proportioning colors, Mr. Strain said, "The advantages of mixing standard automotive colors in the shop from a small number of

basic tinting colors has long been recognized. With the introduction of the new electric Acme Color Eye it is now possible to achieve a high degree of accuracy and assurance in this mixing procedure—and do it easily and quickly.

The Acme Color Eye measures the level of color poured into a container by interrupting the light beam when the color has reached the desired level. The operation of the device is this: required proportions of basic tinting colors are indicated on the large lighted dial. This automatically establishes the level of a transparent rod which extends into the mixing can. A light beam travels down this rod of special transparent composition and is reflected in the surface of the color in the can. The instant the color reaches the correct level and touches the end of the illuminated rod, the reflection automatically disappears, giving an instantaneous stop-pour signal.



Arvin Features Winter Air-Conditioning

Arvin heaters for 1938-39, made by Noolitt-Sparks Industries, Inc., Columbus, Indiana, feature winter air-conditioning. Specifically defining the term "air conditioning" as applied to winter heating of the interior of the car, Arvin engineers make no claim to summer air-conditioning to agree that the term "winter air-conditioning" must perform three functions: (1) it must heat the air, (2) it must circulate the air, (3) it must control humidity. The Arvin winter air-conditioning system performs all three of those functions with remarkable efficiency, it is said. The Arvin heater warms the air inside the car, circulates the heated air at high velocity, and the fresh air intake which may be installed with any model Arvin heater provides for humidity control, reducing rather than increasing the moisture in the air. It is a dehumidifying action.

The new Arvin for Ford installation mounts in the center of the dash, providing ample clearance for gear and cowl levers, radio and battery. Tailor-made fittings and an adjustable thermostat make for easy installation to one bank of the engine. A new heater core is used, shaped

like a horseshoe. A new motor and fan mounting was designed that pulls a big volume of air through the heater radiator and forces the heat through the down flow front, side door deflectors and two defroster outlets. Water pipes are $\frac{7}{8}$ in. to provide extra circulation. An adjustable thermostat with oversized hose nipple is included for fast warm up and efficient control of hot water temperature. This heater is known as Arvin Model 67F. It comes with form-fit metal water pipes, ready-made connection for lower radiator hose, free-flow shut-off valve, seal tight clamps and adjustable thermostat. The fittings and thermostat are packed together for 1937-38 Ford 85, 1937-38 Ford 60, or 1936 and previous Ford V-8 cars. The heater is packed separately. Heater and fittings complete, as ordered, list at \$16.95. The winter air-conditioning attachment lists at \$3.95.

New Model Announced

Just how "automobile minded" the American public is becoming is revealed in the announcement sent out

by the California parents of a baby boy. The announcement read:

Our new model—The Baby Grand Mr. and Mrs. announce their new model No. 1—Boy. Date model released—July 20, 1938. Premier showing at 212 Seventh St.

FEATURES

1. Weight—7 lb. 6 oz.; 2. Two lung-power; 3. Free squealing; 4. Scream line body; 5. Economical feed; 6. Water-cooled exhaust; 7. Headlights: blue; 8. Changeable seat covers.

The management assures the public there will be no new models during the balance of the year.

August Race Schedule

With the Crossbay Speedway at Ozone Park, Long Island, accepted for AAA competition, five events there were added to the American Automobile Association's August schedule.

The first August event there was run on Aug. 3 with others to follow on Aug. 10, 17, 24 and 31.

The richest of the Fair sprint events is on the three "A" card for August. The annual program at the Illinois State Fair at Springfield will be staged on Aug. 20; the Wisconsin State Fair speed events will follow at Milwaukee for three days on Aug. 21, 25 and 28.

In the latest changes, the AAA cancelled out the two-day program scheduled at the Brockton, Mass., fairgrounds on Sept. 16 and 17, and added a sprint card at the Mineola (Long Island) Fair on Sept. 24.

The August events follow:

- Aug. 3 Crossbay Speedway, Long Island
- " 6 Lewistown (Pa.) Fair
- " 10 Crossbay Speedway, Long Island
- " 14 Cook County fairgrounds, Chicago, Ill.
- " 17 Crossbay Speedway, Long Island
- " 20 Middletown (N. Y.) Fair
- " 20 Illinois State Fair, Springfield
- " 21 Wisconsin State Fair, Milwaukee
- " 24 Crossbay Speedway, Long Island
- " 25 Wisconsin State Fair, Milwaukee
- " 27 Hamburg (N. Y.) Fair
- " 28 Wisconsin State Fair, Milwaukee
- " 31 Crossbay Speedway, Long Island

Relay Improves

Headlight Output

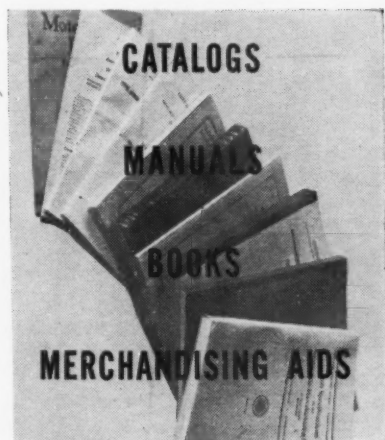
Due to the resistance in wire, dimmer and light switches, the automobile headlight bulb seldom operates at full rating. Using the total candlepower is said to be possible with the LR-1 Headlight Relay introduced by the P. & D. Manufacturing Co., Inc., Long Island City, N. Y. It is claimed that this headlight relay cuts out the losses due to resistance in the circuit, and that it does not affect the ordinary operations of the switches. For complete information, write the manufacturer.

Acheson Colloids Appoints New Vice-President



R. Szymanowitz

Raymond Szymanowitz, formerly technical director of Acheson Colloids Corp., has been moved up to vice-president and technical director of Acheson Industries, Inc., technical development company for the Acheson interests. In his new capacity, Szymanowitz will continue supervision of all research activity of Acheson Colloids Corp., Port Huron, Mich.



A shop manual for Graham-Bradley tractors, dealing in detail with every phase of tractor service, has been completed by W. V. DeGalan, service manager of Graham-Paige Motors Corp.

In the interests of electric motor bearing replacement, the Bunting Brass & Bronze Co., Toledo, Ohio, has announced three catalogs. The first on electric motor bearings, the second on standardized stock bearings for general maintenance, and the third on precision bronze bars.

A metal spark plug display cabinet, with a hinged, lockable door is announced by the A C Spark Plug division of General Motors, in connection with a 50-lot spark plug deal. The cabinet holds 150 plugs and is 12 in. wide, 7 in. deep and 18½ in. high. It is so designed that it can be mounted on the wall if counter space is not available.

The Casco Products Corp., Bridgeport, Conn., has introduced a new display known as "Assortment D" consisting of five each of 2 heating elements for Casco automatic lighters. These genuine Casco cigar lighter heating elements are for replacement on well-type standard equipment model cigar lighters. The display, complete with 10 elements, carries a list of \$6.00.

The Victor Mfg. & Gasket Co., Chicago, has recently brought out a new issue of its Victor Gasket Guide, this being the 12th issue since the

first one was published in 1922. In this book Victor not only provides data on gaskets for the popular cars, but also data on the thousands of models of trucks, buses, marine engines, tractors and industrial engines.

A new illustrated catalog of mechanical goods products manufactured by The Goodyear Tire & Rubber Co. is now available upon request, without charge, by writing the company's office at Akron, Ohio. In addition to information on construction and application of various mechanical goods, the catalog also contains valuable hints on proper care of rubber belting and maintenance of belting service records, and a complete list of

Goodyear mechanical goods branches throughout the United States.

The Do-Ray Lamp Co., 1458 S. Michigan Ave., Chicago, Ill., announces a new 1938 catalog featuring automobile lamps and specialties, tiger-ey and cataphote reflex devices for passenger cars and trucks. The catalog is attractively printed in four colors and devotes some 32 pages to the Do-Ray line.

A new bulletin on the operation and promotion of a simonizing department has been issued by The Simoniz Co., 2100 Indiana Ave., Chicago, Ill. Copies will be sent upon request.

SAFETY LIGHTING EQUIPMENT

PROTECTION by REFLECTION

**49% OF ALL ACCIDENTS
60% OF ALL FATALITIES
Occur After Dark**

K-D TRIFLEX REFLECTORS

THIS marvelous reflex reflector is designed to activate the optical principle of retro-directive reflection. The face of the lens is smooth, easily kept clean, highly polished, but the back surface consists of a myriad of facets or cube corners making them perfect multiple reflectors. When a beam of light strikes them the effect is like that thrown off by the facets of a diamond.

Model No. 326 Shatterproof. Made of a solid piece of special light transmission glass embedded in a secret composition. Not affected by vibration. Silver-backed. Unbreakable, waterproof housing. Visible 1,000 feet head-on.

K-D CATALOG NO. 38 NOW READY

A practical, illustrated
"who's who" of the greatest
K-D LINE ever produced

Members by Invitation . . . Rice Leaders of the World Association

THE K-D LAMP CO.

CINCINNATI, OHIO

Jobber Directory (from page 22)

HOUSTON

‡Beard & Stone Electric Co.—PEQTA-20
‡Fred Collins Co.—PEQA-7
‡Jos. F. Meyer Co.—PEQTA-5
‡Neumeyer Motor Parts—PEQTA-3
‡Stadtler Auto Supply Co., Inc.—PEQTA-8
‡Straus-Frank Co.—PEQTA-21

PORT ARTHUR

‡Yakie Supply Co.—PEQTA-2

SAN ANTONIO

‡The Mountjoy Parts Co.—PEQTA-20

TYLER

‡East Texas Auto Supply Co.—PEQTA-6
‡Wadel-Connally Hardware Co.—PEQTA-6

WICHITA FALLS

‡Auto Spring and Supply Co.—PEQTA-7

UTAH

SALT LAKE CITY

‡Felt Auto Parts Co.—PEA-4
‡Inter-Mountain Electric Co.—PEQTA-6
‡Mendenhall Auto Parts Co.—PEQA-2
‡Salt Lake Hardware Co.—PEQTA-40
‡Utah Auto Parts Co.—PEQTA-6
‡Karl Winter—PEQTA-4

VERMONT

BURLINGTON

‡Hagar Hardware and Paint Co.—PEQTA-4
‡Herbert Auto Service, Inc.—PEQA-3
‡Vermont Hardware Co., Inc.—PEQTA-3

RUTLAND

‡Lefrancois & Chamberland, Inc.—PEQTA-3

VIRGINIA

ALEXANDRIA

‡Auto Accessories Co., Inc.—PA-2

DANVILLE

‡Auto Specialty Co., Inc.—PEQTA-2

GALAX

‡Galax Auto Supply—PEQA-2

LYNCHBURG

‡Barker-Jennings Hdwe. Corp.—PEQTA-7
‡Southern Parts and Bearing Co.—PEQTA-3

NORFOLK

‡Chesapeake Auto Sup. Co., Inc.—PEQTA-6

PORTSMOUTH

‡Morse-Parker Motor Supply, Inc.—PTA-2

RICHMOND

‡Benton-Bailey Co., Inc.—PEQTA-8
‡Jos. L. Bickerstaff's Sons, Inc.—PEQTA-10
‡Benj. T. Crump Co., Inc.—PEQTA-12
‡G. G. Moss Co., Inc.—PEQTA-2
‡Motor Parts Corp.—P-2
‡Richmond Auto Parts Co.—PEQT-5
‡Richmond Wholesalers, Inc.—PEQTA-6
‡Virginia Auto Parts Corp.—PQA-2

ROANOKE

‡Auto Spring and Bearing Co., Inc.—PEQTA-6

STAUNTON

‡Simmons Parts Co.—PEQTA-3

WASHINGTON

OLYMPIA

‡Olympian Auto Parts, Inc.—PEQTA-1

SEATTLE

‡Motor Car Supply Co. or Seattle—PEQA-5
‡Piston Service, Inc.—PEQTA-16

SPOKANE

‡Washington Mach. and Sup. Co.—PEQTA-8

TACOMA

‡Pease Bros.—PEQTA-4

VANCOUVER

‡Bakke-Daniels, Inc.—PEQTA-2

YAKIMA

‡Turner Auto Co., Inc.—PEQTA-2

WEST VIRGINIA

CHARLESTON

‡Baldwin Supply Co.—PQTA-15
‡Motor Car Supply Co.—PEQTA-6

Jobbers and Independents



**Pulling
Together
For Profits**

HUNTINGTON

‡Huntington Auto Supply Co.—PEQTA-5

PARKERSBURG

‡A. E. Supply Co.—PEQTA-3

PRINCETON

‡McKenzie Auto Parts Co.—PEQA-2

WHEELING

‡T. T. Hutchisson Co., Inc.—PEQTA-5
‡Levin Auto Parts Co.—PEQTA-2

WISCONSIN

EAU CLAIRE

‡Clemens Auto Supply Co.—PEQTA-4

JANESVILLE

‡W. T. Flaherty & Son, Inc.—PEQTA-2

KENOSHA

‡Fred P. Rudy—PEQTA-2

MADISON

‡Heeb Co.—PEQTA-5
‡Thomas C. Olson Co.—PEQTA-3

MILWAUKEE

‡Motor Grinding and Parts Co.—PEQT-4
‡Shadbolt & Boyd Co.—PEQTA-15

WAUSAU

‡Wisconsin Auto Supply Co.—EQTA-7

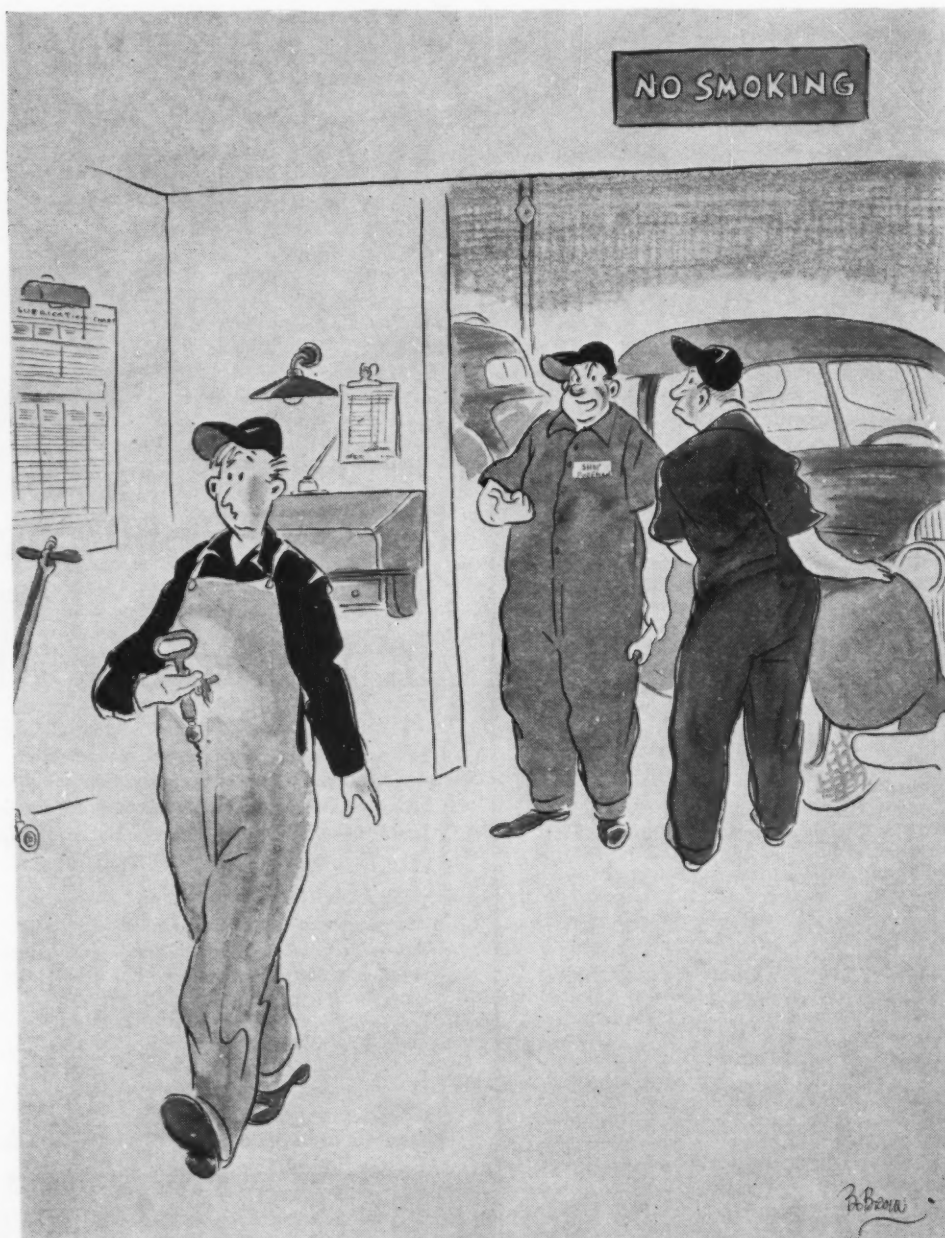
WYOMING

CASPER

‡Casper Supply Co.—PEQTA-12
‡Wyoming Automotive Co.—PEQTA-6

OSHKOSH

‡Hart Supply Co.—PEQTA-6



"He's so dumb he thinks a combustion chamber's a crematory!"

HOW DO LEADING SPARK PLUGS COMPARE?



**STATE OF NEBRASKA SELECTS CHAMPION
SPARK PLUGS EXCLUSIVELY AFTER EXHAUS-
TIVE TESTS ON THIRTEEN LEADING MAKES**



TO DETERMINE the best spark plug for use in Nebraska state-owned automobiles, trucks and tractors, 13 different sets of spark plugs were purchased on the open market for test purposes. In the Engineering Testing Laboratory of the University of Nebraska, long recognized for its authoritative conclusions, and under the direction of C. M. Duff, Testing Engineer, these 13 sets of spark plugs were subjected to far more drastic and severe tests than they would meet in ordinary use.



They were tested for voltage requirements necessary to fire at various pounds pressure—for insulator resistance—for electrode burning—for

insulator resistance to change in temperature (Spalling Test)—and, most important of all, for gas leakage. And Champion emerged triumphant! *Champions alone* came through *all five* tests with *highest rating*, and were the only spark plugs to register no leakage.



Such a remarkable Champion victory is well merited. For over 27 years, all the engineering, manufacturing and research facilities of the Champion Spark Plug Company have been devoted to only one product and the constant betterment of that product.

Champion Spark Plugs outsell because they excel. You can depend on Champions to produce greater sales, turnover and profits for you.

SELL THE SPARK PLUG CHAMPIONS USE

Starterator

(Continued from page 23)

a positive contact with the accelerator pedal rod, the fork must be adjusted so that it is not at an exact right angle to the starter cross shaft. On models prior to 1937 the fork should be set $\frac{1}{8}$ in. to the left of a right angle—on the 1937 models it is $\frac{1}{8}$ in. to the right of a right angle. The difference between the 1937 and prior models is because the starter fork is located to the right of the accelerator pedal rod on the older models, and to the left of the rod on the 1937 models. The adjustment for the starter con-

trol fork is by means of a lock nut and adjusting screw indicated in Fig. 1, and marked "A" and "B" in Fig. 2. Loosen the lock nut and turn the adjusting screw to give the desired setting. Be sure to tighten the lock nut after the adjustment is made.

The third adjustment to be checked is the amount of clearance between the starter control fork and the back edge of the notch in the accelerator pedal rod. There must be $\frac{1}{8}$ in. clearance at this point to allow a slight override of the accelerator pedal rod before it comes in contact with the starter control fork. To obtain this clearance, disconnect the accelerator

rod from the accelerator bell crank at the side of the engine. Loosen the clevis pin lock nut and turn the clevis in or out to obtain the $\frac{1}{8}$ in. clearance between the edge of the slot and the starter fork.

The fourth adjustment is for the purpose of giving the proper throttle opening to the carburetor before the starting motor starts to turn. This is controlled by the amount of clearance existing between the starter switch spring seat and the starter link. There should be from $\frac{5}{16}$ in. to $\frac{1}{2}$ in. clearance at this point. (See circular inset Fig. 1 and also Fig. 3.) To obtain the proper clearance, add or remove snap springs on the starter switch plunger, as shown in Fig. 3.

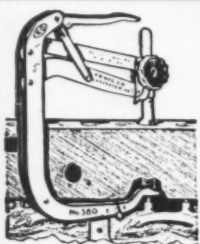
Did you ever
wish you had
THREE HANDS?



K-D TOOLS

around a shop are as good as "extra hands." Every one is a time saver,

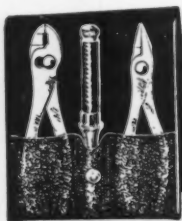
designed for easy, one-man operation. Take a look . . .



380
a good
Compressor
in any shop

Fast, strong, dependable, will service nearly all motors made. The best all-round Compressor for general

shop use. Hand wheel automatically sets adjustment for each motor and over-center lock on handle leaves both hands free to handle keepers. Jaws tempered in oil and adjustable . . . two sets furnished, straight and offset. List Price, only \$8.10



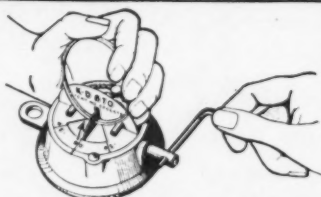
5B
TOOL KIT

Small tools of special design for hard-to-get-at jobs around ignition, radio, carburetor, dash, etc. Three screwdrivers, two pliers, special alloy steel, hardened to stand the gaff. Each $4\frac{1}{4}$ " long. Pocket-size labrioid case. Makes ideal gift or prize. List Price only \$1.75 Set

875
PISTON RINGER



This one-piece, pocket-size tool removes and installs all makes, types and sizes of Piston Rings up to 4" and does it easily, quickly and safely. Grips ring as shown and when spreader handles are compressed, ring is expanded just enough to allow its removal from (or installation in) groove. Stretched rings and cut fingers can be avoided. List Price only \$1.35



870 PISTON RING FILER

Replaces old-fashioned, uncertain methods for sizing Rings. The double-faced rotary file cuts quickly and absolutely parallel. Adjustable, calibrated gage plate assures proper angle and eliminates human error. Saw teeth on edge of file useful for slotting pistons and many other rotary hacksaw operations. With one Cutter-file. List Price only \$4.55

ASK YOUR JOBBER FOR DEALERS' NET PRICES

K-D MANUFACTURING CO.

Lancaster, Pa.

New Precision

Paint Mixing Device

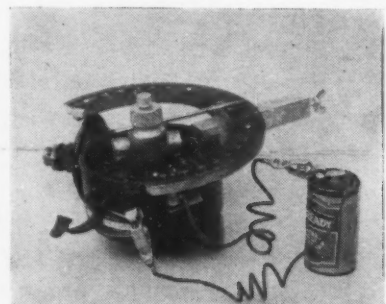


The Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit, Mich., has developed a new measuring device for mixing paint, using a light beam to obtain accurate quantities of each color desired. The required proportions of basic tinting colors are indicated on the large lighted dial. This automatically establishes the level of a transparent rod which extends into

the mixing can. A light beam travels down this rod of special transparent composition and is reflected in the surface of the color in the can. The instant the color reaches the correct level and touches the end of the illuminated rod, the reflection automatically disappears, giving an instantaneous stop-pour signal.

Cam Angle Protractor

A new cam angle protractor for properly setting contact points and accurately synchronizing distributors has been announced by Lanagan & Hoke, Inc., 1638 Hunting Park Ave., Philadelphia, Pa. The new instrument is made in two sizes, one for



universal application including Ford V-8 and Lincoln Zephyr cars, and the other for Ford V-8 cars only. Guaranteed by the manufacturer to be as accurate as machines costing from \$200 to \$400, these new protractors are priced at \$10.50 for the universal model and \$9.50 for the Ford model.

NEW DU PONT ANTI-SQUEAK

Orel

WON'T HARM RUBBER !

**Penetrating lubricant
for rubber and metal
—works on entirely
new principle**

HERE AT LAST is a lubricant that ends chassis squeaks without harming rubber. It's "Orel," newly developed by Du Pont chemists, ideal for all rubber parts and metal-to-metal chassis contacts.

"Orel" penetrates where ordinary "penetrating oils" can't reach. Far between spring leaves, for example, and between rubber and metal.

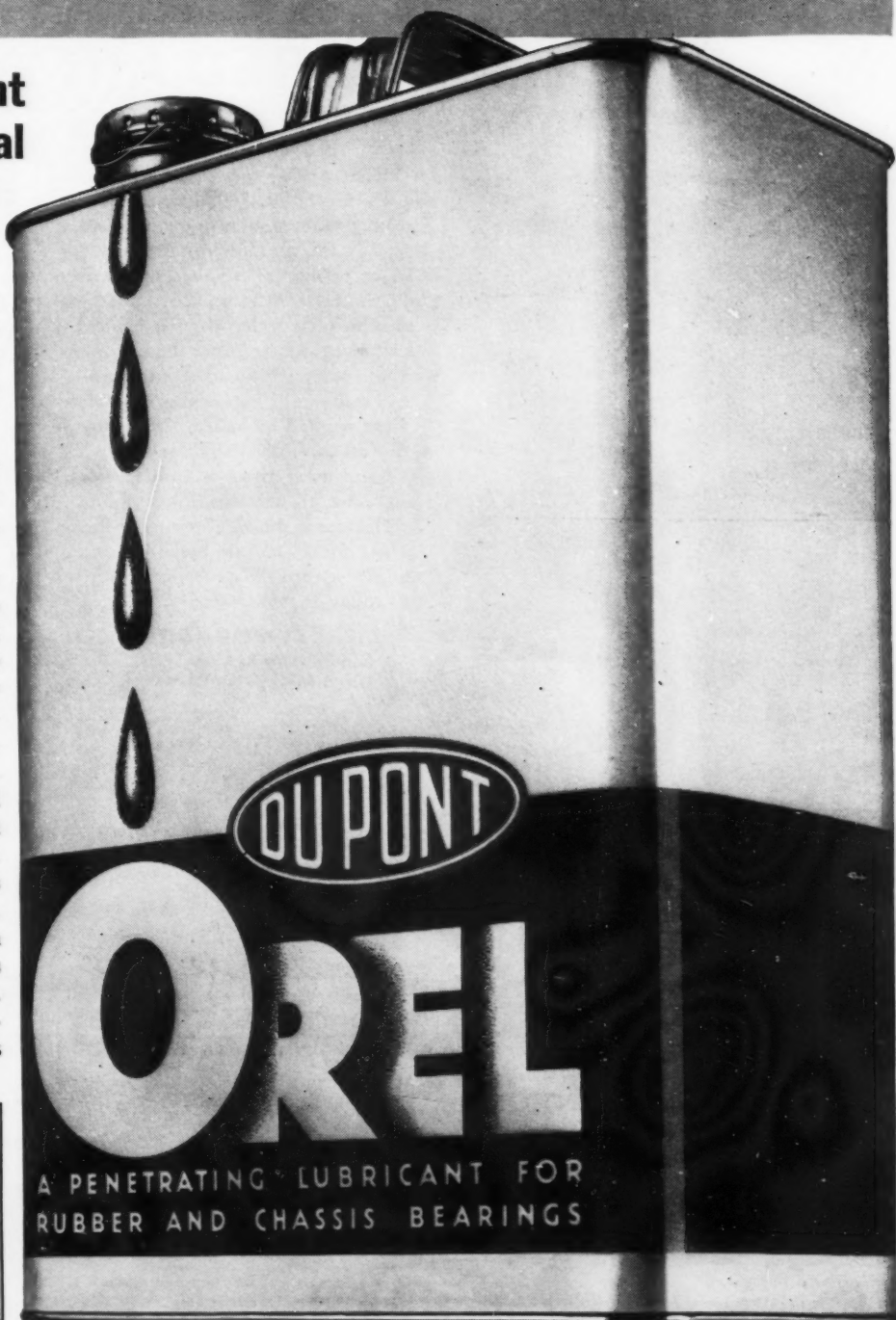
Make "Orel" part of your regular chassis lubrication job. It's easy to apply . . . just use a brush, or an oil can that squirts a thin stream. Use "Orel" on bushings in shock absorber arms, spring shackles, sway eliminator bars, motor and body mountings, fan belts, knee action units. That way you'll win friends . . . and influence people to come back to you next time a "canary" comes to life.

"Orel" is made by Du Pont, makers of "Zerone" Anti-Rust Anti-Freeze.

Order your supply of "Orel" from your "Zerone" jobber today. Cases of three gallons, \$1.85 per gallon. Five-gallon containers, \$1.75 per gallon. E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware.

Check these advantages

- (1) Won't harm rubber
- (2) Suitable for metal-to-metal chassis contacts
- (3) Penetrates quickly
- (4) Won't wash out
- (5) Made by Du Pont



Syracuse Race

(Continued from page 29)

While efforts have been made to adjust the situation, there was no promise from official quarters that Syracuse would be permitted to stage its fall race under the three "A" sanction.

On the other hand, Ira Vail, former big league driver and now auto race secretary for the Fair, told MOTOR AGE, "We are planning to run a Championship race at Syracuse on Sept. 10 with qualifying trials on Sept. 9." He voiced confidence that the misunderstanding with the sanc-

tioning board would soon be adjusted.

If Syracuse fails to get back into the AAA's good graces, the event will become the second major classic to be cancelled from speed's national championship calendar this year.

The proposed George Vanderbilt cup classic at Roosevelt Raceway was abandoned early in the year when the Raceway management hung out the "for sale" sign with the explanation it was quitting with a loss of "a million dollars."

The twenty-sixth running of the 500 Mile International Sweepstakes at the historic Indianapolis Speedway on May 30 is the only championship event so far run this year.

There Floyd Roberts gained a claim to the national championship title with his record victory and the 1000 points credited by the AAA.

If Syracuse doesn't stage its title event, Roberts will be presented with the diamond-studded title medal by the automobile association's governing board.

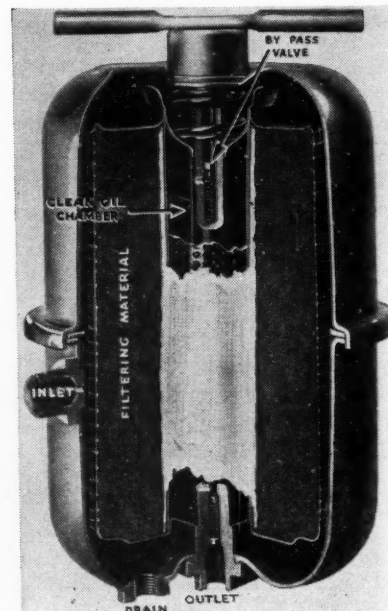
If the event is run, Wilbur Shaw, second place winner at Indianapolis and current champion, will have a long-shot chance at the title. To shove Roberts from the top perch, it would be necessary for Shaw to win the Syracuse event for which 200 points would be offered. Shaw received 825 points at Indianapolis and for him to cinch the crown, Roberts could not finish above eleventh place at Syracuse.

Two drivers who did not complete the 500 miles at Indianapolis gained places on the national championship point list. The roster provides for twelve positions and so long as a driver completes fifty-five per cent of the distance, he is allowed his position on the title standing.

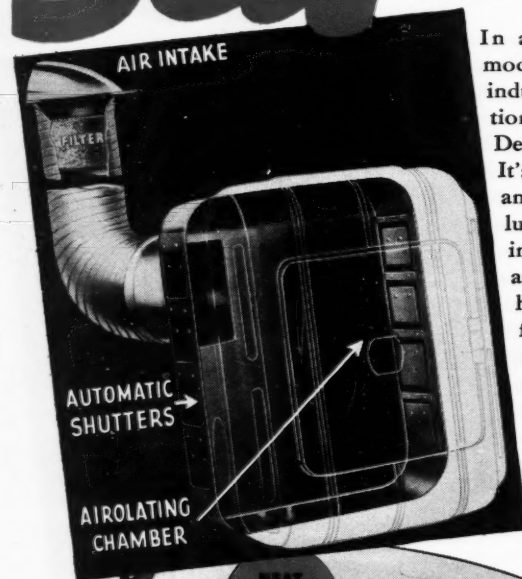
Duke Nalon, driving the Kohlert-Miller Special, was flagged at 445 miles and awarded eleventh position. The last place on the title list—twelfth—went to George Bailey, driving the Duray-Barbasol Special, who was forced to quit at 415 miles because of failure of his rear axle shaft.

New Filter Announced by AC

A new oil filter that can be used as a new installation or as a replacement unit has been announced by the AC Spark Plug Co., Flint, Mich. One model fits all passenger cars and light trucks. The filter element may be replaced by a new one without disconnecting any fittings and without discarding the steel shell. It is composed of igneonite material, a high efficiency ceramic material which cannot disintegrate, and is said to remove dirt and sludge from the oil and to re-condition the old oil. Connections are of neoprene tubing, built to airplane standards.

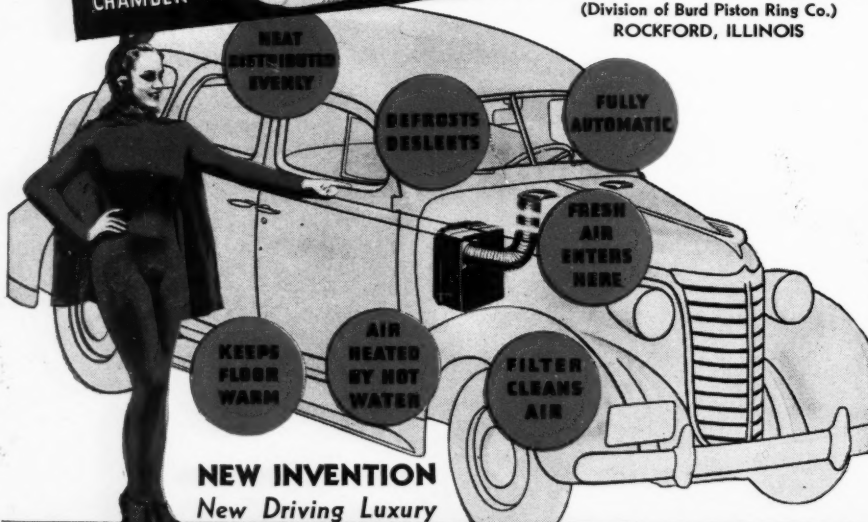


Sell FRESH AIR FILTERED AIR HOT WATER HEATED



In addition to 9 new, improved models for 1939, HaDees scoops the industry with an amazing new invention . . . the greatest opportunity for Dealer profits in car heating history. It's the HaDees Automatic Airolator*, an achievement that completely revolutionizes car heating. Utterly new in principle, it brings both winter and summer driving luxury motorists have wanted for years. Guaranteed for all cars. Easy to install. Opens brand new road to quick sales, greater profits. No doubt of it . . . HaDees is the *big news* in car heating for 1939. Be profit-wise . . . investigate. HaDees first! Write today for full facts.

LIBERTY FOUNDRIES CO.
(Division of Burd Piston Ring Co.)
ROCKFORD, ILLINOIS



NEW INVENTION
New Driving Luxury

HaDees HOT WATER Airolating CAR HEATERS

BURD PISTON RINGS • LINDBLOOM VALVE PACKING

ATLANTA, GA. . . 542-544 Spring St. N.W. DALLAS, TEXAS . . . 2705 Canton St. MINNEAPOLIS, MINN. . . 21 S. 13th St. SAN FRANCISCO, CAL. . . 540 McAllister St.
BOSTON, MASS. . . 1 Brighton Ave. KANSAS CITY, MO. . . 1806 McGee St. NEW YORK, N. Y. . . 540 W. 52nd St. SEATTLE, WASH. . . 3609 Boylston Ave.
CHICAGO, ILL. . . 2236 S. Wabash Ave. LOS ANGELES, CAL. . . 1425 S. Flower St. ST. LOUIS, MO. . . 3225 Locust Blvd. TORONTO 5, Ont. Can. . . 115 George St.
WINNIPEG, MAN. CAN. . . 826 Lombard St.

GET PROMPT SERVICE FROM ANY OF THESE CONVENIENT BURD WAREHOUSES

STORM FLAGS FLYING!

MAKE A DATE WITH YOUR NOR'WAY DEALER



DRIVE IN HERE. You can depend on the man that displays this sign. He is an authority on cold weather driving. Let him put Nor'way Anti-Freeze in your radiator and "winter-check" your car from stem to stern.



EXPERT SERVICE. The Nor'way Dealer doesn't guess how much radiator protection you need. He takes careful hydrometer readings and figures out exactly the amount of Nor'way Anti-Freeze to use. And you pay only for what you get!



NOR'WAY IS STRONGER! Much more effective than ordinary alcohol. Three quarts will do the work of four! It protects all five metals against corrosion. And last—but not least—it is practically odorless. No unpleasant smell!



MORE FOR THE MONEY! Nor'way provides more protection yet it costs no more than other anti-freeze solutions. Only 25 cents a quart—a dollar a gallon! So—play safe this winter. Insist on Nor'way—the Reliable Service Anti-Freeze.

NOR'WAY
RELIABLE SERVICE ANTI-FREEZE

APPROVED DEALERS OF NOR'WAY ANTI-FREEZE

BROWN'S SERVICE STATION • 231 MAIN STREET

A PRODUCT OF THE COMMERCIAL SOLVENTS CORPORATION

**THAT'S
THE KIND OF
COOPERATION I LIKE!
LOCAL NEWSPAPER
ADVERTISING!**

BROWN'S SERVICE



ASK YOUR JOBBER about the new Nor'way Anti-Freeze Promotion Program. It includes: Practical Sales Helps—Exclusive Service Aids—Local Newspaper Advertising.

COMMERCIAL SOLVENTS CORPORATION
NEW YORK CENTRAL BUILDING, NEW YORK, N. Y.

Mechanical Specifications

These Specifications Are Brought Up-to-Date Each Month by the

Line Number	MAKE AND MODEL	Lowest Priced 4-d. Sed. (Div'd.)	Wheelbase (In.)	Tire Size (In.)	ENGINE															CHASSIS									
					No. of Cylinders, Bore and Stroke	Taxable Hp.	Piston Displacement (Cu. In.)	Maximum Brake HP. at Specified R.P.M.	Compression Ratio (to-1)	Displacement Factor %	Cylinder Head Material	Camshaft Drive Make	Piston Material	Oil Cleaner Make	Air Cleaner Make	Carburetor Make	Muffler Make	Electrical System Make	Battery Make	Clutch	Type and Make	Gearset Make	Universals Type and Make	Rear Axle Type and Make	Rear Axle Ratio	Front Spring			
1	Bantam.....60	439	75	5.00/15	4-2.2x3.0	7.75	45.6	20-4000	7.00	....	Al	Gear	Als	No	No	Til	Buf	AL	Wil	P.Ro	WG	Nb-UP	1/2 Spi	5.87 Tr				
2	Buick.....38-40	1022	122	6.50/16	8-3 1/4 x 4 1/4	30.6	248.0	107-3400	6.15	39.2	CI	LB	Ala	No	AC	SM	Wal	DR	Del	P.Long	Own	m-Spi	1/2 Own	4.40 IC					
3	Buick.....38-60	1272	126	7.00/15	8-3 1/4 x 4 1/4	37.8	320.2	141-3600	6.25	42.3	CI	LB	Ala	No	AC	SM	Wal	DR	Del	P.B&B	Own	m-Spi	1/2 Own	3.90 IC					
4	Buick.....38-80	1645	133	7.00/16	8-3 1/4 x 4 1/4	37.8	320.2	141-3600	6.25	39.3	CI	LB	Ala	No	AC	SM	Wal	DR	Del	P.B&B	Own	m-Spi	1/2 Own	4.18 IC					
5	Buick.....38-90	2176	140	7.50/16	8-3 1/4 x 4 1/4	37.8	320.2	141-3600	6.25	38.6	CI	LB	Ala	No	AC	SM	Wal	DR	Del	P.B&B	Own	m-Spi	1/2 Own	4.55 IC					
6	Cadillac V8-38-60-60S	2085	127	7.00/16	8-3 1/4 x 4 1/4	39.2	346.0	135-3400	6.25	....	CI	Mor	Ala	No	AC	Str	Wal	DR	Del	P.Long	Own	Nb-Mec	1/2 Own	3.92 IC				
7	Cadillac... V8-38-65	2285	132	7.50/16	8-3 1/4 x 4 1/4	39.2	346.0	135-3400	6.25	42.8	CI	Mor	Ala	No	AC	Str	Wal	DR	Del	P.Long	Own	Nb-Mec	1/2 Own	4.58 IC					
8	Cadillac... V8-38-75	3075	141	7.50/16	8-3 1/4 x 4 1/4	39.2	346.0	140-3400	6.70	39.7	CI	Mor	Ala	No	AC	Str	Wal	DR	Del	P.Long	Own	Nb-Mec	1/2 Own	4.58 IC					
9	Cadillac-V-16...38-90	5135	141	7.50/16	16-3 1/4 x 3 1/4	67.6	431.0	185-3600	6.80	....	CI	Mor	Ala	Fram	AC	Car	Wal	DR	Del	P.Long	Own	Nb-Mec	1/2 Own	4.31 IC				
10	Chevrolet HB Master	730	112 1/4	6.00/16	6-3 1/4 x 3 3/8	29.4	216.5	85-3200	6.25	35.7	CI	Own	CI	No	AC	Car	Own	DR	D	P.Own	Own	m-Own	1/2 Own	3.72 C					
11	Chevrolet...HA DeL.	796	112 1/4	6.00/16	6-3 1/4 x 3 3/8	29.4	216.5	85-3200	6.25	39.7	CI	Own	CI	No	AC	Car	Own	DR	D	P.Own	Own	m-Own	1/2 Own	4.22 IC					
12	Chrysler...Roy. C-18	998	119	6.25/16	6-3 3/4 x 4 1/4	27.3	241.5	95-3600	6.20	39.3	CI*	Mor	Ala	Pur	BA	Car	NS	AL	Wil	P.B&B	Own	Nb-UP	1/2 Own	4.10 IC					
13	Chrysler...Imp. C-19	1198	125	6.50/16	8-3 1/4 x 4 1/4	33.8	298.6	110-3400	6.20	39.5	CI*	M-W	Ala	Pur	AC	Str	NS	AL	Wil	P.B&B	WG	Nb-UP	1/2 Own	3.91 IC					
14	Chrysler Cus.Im.C-19	2295	144	7.50/16	8-3 1/4 x 4 1/4	33.8	323.5	130-3400	6.50	....	Al	M-W	Ala	Pur	AC	Str	NS	AL	Wil	P.B&B	WG	Nb-UP	1/2 Own	4.55 IC				
15	De Soto.....S-5	958	119	6.00/16	6-3 3/4 x 4 1/4	27.3	228.1	93-3600	6.50	37.8	CI*	Mor	Ala	Pur	AC	Car	NS	AL	Wil	P.B&B	Own	Nb-UP	1/2 Own	4.10 IC					
16	Dodge.....Six	898	115	6.00/16	6-3 1/4 x 4 1/4	25.3	217.8	87-3600	6.50	38.0	CI	Mor	Als	Pur	AC	Str	NS	AL	Wil	P.B&B	Own	Nb-UP	1/2 Own	4.10 C					
17	Ford.....V8-60	6851	112	5.50/16	8-2 6/8 x 3 1/2	21.6	136.0	60-4200	6.60	30.0	Al	Gear	CS	No	Yes	Str	Own	O	Own	P.Os	Own	m-Spi	1/2 Own	4.44 Tr					
18	Ford.....V8-85	7101	112	6.00/16	8-3 1/4 x 3 3/4	30.0	221.0	85-3800	6.12	37.5	Al	Gear	CS	No	Yes	Str	Own	O	Own	P.Os	Own	m-Spi	1/2 Own	3.78 Tr					
19	Graham...Std., Spec.	1025	120	6.00/16	6-3 1/4 x 4 1/4	25.3	217.8	90-3600	6.70	35.3	Al	LB	Als	No	Bur	Mar	Old	DR	Wil	P.Long	WG	Nb-UP	1/2 Spi	4.27 C					
20	Graham S.c., Cus.S.C.	1198	120	(h)	6-3 1/4 x 4 1/4	25.3	217.8	116-4000	6.70	....	Al	LB	Als	Fram	Bur	Mar	Old	DR	Wil	P.Long	WG	Nb-UP	1/2 Spi	4.27 C				
21	Hudson 112.....89	755	112	5.50/16	6-3x4 1/8	21.6	175.0	83-4000	6.50	....	CI	GED	Al	No	Bur	Car	Old	AL	Nat	P.Own	Own	Nb-Spi	1/2 Own	4.11 C				
22	Hudson-Terrap...81	864	117	6.00/16	6-3x5	21.6	212.0	96-3900	6.25	38.0	CI	GED	Al	No	AC	Car	Old	AL	Nat	P.Own	Own	Nb-Spi	1/2 Own	4.11 C					
23	Hudson-Terrap...82	915	117	6.00/16	6-3x5	21.6	212.0	101-4000	6.25	37.5	CI	GED	Al	No	AC	Car	Old	AL	Nat	P.Own	Own	Nb-Spi	1/2 Own	4.11 C					
24	Hudson, 6.....83	984	122	6.00/16	6-3x5	21.6	212.0	101-4000	6.25	36.7	CI	GED	Al	No	AC	Car	Old	AL	Nat	P.Own	Own	Nb-Spi	1/2 Own	4.11 C					
25	Hudson 8, 84, 5, 7	1060	122, 129	6.50/16	8-3x4 1/2	28.8	254.5	122-4200	6.25	41.2	CI	GED	Al	No	AC	Car	Old	AL	Nat	P.Own	Own	Nb-Spi	1/2 Own	4.11 C					
26	Hupmobile Six....E	1045	122	6.25/16	6-3 1/4 x 4 1/4	29.4	245.3	101-3600	5.75	42.2	CI	Mor	Als	No	AC	Car	Old	AL	Wil	P.B&B	WG	Nb-Spi	1/2 Spi	4.54 C					
27	Hupmobile Eight...H	1325	125	6.50/16	8-3 1/4 x 4 1/4	32.5	303.2	120-3500	5.80	44.5	CI	Mor	Als	No	AC	Car	Old	AL	Wil	P.Long	WG	Nb-UP	1/2 Spi	4.54 C					
28	La Salle....V8, 38-50	1385	124	7.00/16	8-3 3/4 x 4 1/4	36.4	322.0	125-3400	6.25	40.7	CI	Mor	Ala	No	AC	Car	Wal	DR	Del	P.Long	Own	Nb-Mec	1/2 Own	3.92 IC					
29	Lincoln.....V12	(i) 1375 1/2	136-145	7.50/17	12-3 1/2 x 4 1/2	46.8	414.0	150-3400	6.38	34.3	Al	Ch	Al	Pur	AC	Str	Own	AL	Exi	P.Long	Own	m-Spi	FF Tim	4.58 C					
30	Lincoln-Zephyr...	1375 1/2	125	7.00/16	12-2 3/4 x 3 3/4	36.3	267.0	110-3900	6.70	40.8	Al	Gear	CS	No	...	CG	Own	O	Own	P.Os	Own	m-Spi	1/2 Own	4.44 Tr					
31	Nash Lafay.....3810	850	117	6.00/16	6-3 3/4 x 4 1/4	27.3	234.8	95-3400	5.83	38.4	CI	Whit	Als	No	AC	Str	Wal	AL	USL	P.B&B	Own	Nb-Mec	1/2 Own	4.11 C					
32	Nash...Amb. 6, 3820	1050	121	6.25/16	6-3 3/4 x 4 1/4	27.3	234.8	105-3400	6.00	35.5	CI	Whit	Als	BS	AC	Mar	Wal	AL	USL	P.B&B	Own	Nb-Mec	1/2 Own	4.11 C					
33	Nash...Amb. 8, 3880	1200	125	7.00/16	8-3 3/4 x 4 1/4	31.2	260.8	115-3400	6.00	35.0	CI	Dia	Als	BS	Bur	Str	Wal	AL	USL	P.B&B	Own	Nb-Mec	1/2 Own	4.10 C					
34	Oldsmobile....F-38	967	117	6.50/16	6-3 1/4 x 4 1/4	28.4	229.7	95-3400	6.10	38.4	CI	Whit	Ala	No	AC	Car	Var	DR	D	P.B&B	Own	Nb-Mec	1/2 Own	4.37 IC					
35	Oldsmobile....L-38	1078	124	7.00/16	8-3 1/4 x 3 3/8	33.8	257.1	110-3600	6.20	41.7	CI	LB	Ala	No	AC	Car	Var	DR	D	P.B&B	Own	Nb-Mec	1/2 Own	4.37 IC					
36	Packard Six.....1600	1175	122	6.50/16	6-3 1/4 x 4 1/4	29.4	245.3	100-3600	6.52	40.0	CI	Mor	Als	Pur	AC	CG	Old	DR	Wil	P.Long	Own	Nb-Mec	1/2 Own	4.54 IC					
37	Packard Eight, 1601, 2	1325	127, 48	7.00/16	8-3 1/4 x 4 1/4	33.8	282.0	120-3800	6.60	41.4	Al	Mor	Als	Pur	AC	Str	Old	AL	PD	P.Long	Own	Nb-UP	1/2 Own	(b) IC					
38	Pack. Sup. 8, 1603, 4.5	2790	127-34-39	7.50/16	8-3 3/4 x 5	32.5	320.0	130-3200	6.50	40.0	Al	Mor	Als	Pur	AC	Str	Old	AL	PD	P.Long	Own	Nb-UP	1/2 Own	4.69 IC					
39	Pack. Twelve, 1607, 8	4155	134, 39	8.25/16	12-3 1/4 x 4 1/4	56.7	473.0	175-3200	6.40	45.3	Al	Mor	Als	Pur	AC	Str	Old	AL	PD	P.Long	Own	Nb-Spi	1/2 Own	4.41 IC					
40	Plymouth.....P5	730	112	5.50/16	6-3 1/4 x 4 1/4	23.4	201.3	82-3600	6.70	36.6	CI*	Mor	Ala	No	BA	BC	NS	AL	Wil	P.B&B	Own	Nb-UP	1/2 Own	3.90 C					
41	Plymouth.....P6	803	112	6.00/16	6-3 1/4 x 4 1/4	23.4	201.3	82-3600	6.70	36.2	CI*	Mor	Ala	No	BA	BC	NS	AL	Wil	P.B&B	Own	Nb-UP	1/2 Own	4.10 C					
42	Pontiac 6...38-26DA	916	117	6.00/16	6-3 1/4 x 4	28.3	222.7	85-3520	6.20	37.4	CI	Mor	CHI	No	AC	Car	BH	DR	Del	P.Own	Own	Nb-Mec	1/2 Own	4.37 IC					
43	Pontiac 8...38-28DA	980	122	6.50/16	8-3 1/4 x 3 3/4	33.8	248.9	100-3700	6.20	40.0	CI	Mor	CHI	No	AC	Car	BH	DR	Del	P.Own	Own	Nb-Mec	1/2 Own	4.37 IC					
44	Stude. Com. & Sta. C.	965	116 1/2	6.00/16	6-3 1/4 x 4 1/4	26.3	226.0	90-3400	6.00	41.2	CI	Dia	Ly	Fram	AC	Str	Bur	AL	Wil	P.B&B	WG	Nb-Spi	1/2 Spi	4.55 IT					
45	Studebaker...Pres. 4C	1195	122	6.50/16	8-3 1/4 x 4 1/4	30.0	250.4	110-3600	6.00	41.6	CI	Dia	Ly	Fram	AC	Str	Bur	DR	Wil	P.Long	WG	Nb-Spi	1/2 Spi	4.55 IT					
46	Willys.....38	5631	100	5.50/16	4-3 3/8 x 4 3/8	15.6	134.2	48-3200	5.70	31.6	CI*	LB	CI	F-O	AC	Til	Buf	AL	USL	P.R-B	WG	m-UP	1/2 Own	4.30 C					

ABBREVIATIONS—General
 c—Others also
 *—Measured on rim of Flywheel
 1/2—Semi-floating
 3/4—Three-quarter floating
 ††—With clearance of .015 the valve is .004 off its seat.
 †—Does not include Federal Taxes
 §—Computed on basis of displacement, gear ratio, effective tire diameter, and weight with normal load.

(a) — (1/4 to + 1/2)
 A—Above (rods removed from)
 A—After top center
 AA—Automatic adjuster
 Ad—Advanced
 Al—Aluminum
 Ala—Aluminum, Anode processed
 Als—Aluminum with struts
 Au—Automatic
 (b) — 4.36-1601; 4.70-1602
 B—Below (rods removed from)
 B—Before top center

Bm—Before marks on vibration damper
 (c) — 1-1/8, 1-3/8
 C—Conventional
 C—Cold (Tappet clearance)
 Ch—Chain
 CHI—Chrome Nickel Iron
 CI—Cast Iron CS—Cast Steel
 CSM—Chain sprocket markings
 (d) — 0-0-1/2 (e) — 0-0-1/2-0
 (f) — 1/4 x 1/8-0
 F—Floating (Piston Pin)

FF—Full floating
 (g) — 138 in.-7.00/17; 147 in.-7.50/17
 (h) — 6.25/16 on standard, 6.50/16 on Custom.
 H—Hot (tappet clearance)
 (i) — 4900-5100 IC—Independent coil
 IT—Independent Transverse
 (k) — Intake .0125; Exhaust .0156
 Ly—Lynite
 m—Metal
 M—Mechanical N—Negative
 (n) — Intake .0124; Exhaust .0156

Nb—Needle bearing
 P—Piston (Pin Locked in)
 P—Single plate clutch
 PH—Power operated, hydraulic brakes
 R—Rod (Pin locked in)
 (r) — Out only Ru—Rubber
 TC—Top Center
 Tr—Transverse
 Var—Various
 x—At 1000 R.P.M.
 y—At 2800 R.P.M.

Tune-Up Specifications

Car Manufacturers and Supersede All Others Previously Published

Front Spring Suspension	Service Brake Make and Type	Steering Gear Make	Compression Pressure at Cranking Speed (Lbs.)	Spark Plug Make and Type	RINGS		Piston Pin Diameter	Piston Pin Locked In	VALVES						IGNITION						Rods Removed From	Crankpin Diameter (Ins.)	Crankpin Length (Ins.)	Capacity Crankcase (Qts.)	Capacity Cooling System (Qts.)	FRONT AXLE				Line Number
					No. and Width Comp.	No. and Width Oil			Head Diameter and Seat Angle				Operating Tappet Clearance		Intake Valve Opens Before or After T.C.	Breaker Points Gap (Ins.)	Timing			Caster (Degrees)						Camber (Degrees)	Toe-In (Inches)	King Pin Inclination (Degrees)		
									Inlet (Ins.)	Inlet Seat Angle (Degrees)	Exhaust (Ins.)	Exhaust Seat Angle (Degrees)	Stem Diameter (Ins.)	Inlet			Exhaust	Spark Plug Gap (Ins.)	Spark Occurs °TC										No. of Flyw. Teeth Spark Occurs TC	
7 Tr	OM La	90 AL-A9	2-3/8 1-1/8	2-3/8 1-1/8	R	1 3/8	30	1 3/8	30	.279	.006	.006	.006	19B	4 1/8	.022	.025	2 1/8	1B	Au	A	1 1/8	1 1/4	3 7	5	3/4	0° 9'	1 1/2	1	
10 IC	OH S	112 AC-46	2(c) 2-1/8 1 1/8	2-1/8 1 1/8	R	1 1/4	45	1 1/4	45	.372	.015H	.015H	13B	5 1/8	.015	.025	4B	1 1/8	Au	A	2	1.21	6 13 1/4	N 1 1/2	1 1/4	0-1/8	3 1/4	2		
10 IC	OH S	114 AC-46	2(c) 2-1/8 1 1/8	2-1/8 1 1/8	R	1 1/4	45	1 1/4	45	.372	.015H	.015H	14B	6B	.015	.025	6B	2 1/8	Au	A	2 1/4	1.31	8 17	N 1 1/2	1 1/4	0-1/8	3 1/4	3		
15 IC	OH S	114 AC-46	2(c) 2-1/8 1 1/8	2-1/8 1 1/8	R	1 1/4	45	1 1/4	45	.372	.015H	.015H	14B	6B	.015	.025	6B	2 1/8	Au	A	2 1/4	1.31	8 17	N 1 1/2	1 1/4	0-1/8	4 1/2	4		
15 IC	OH S	114 AC-46	2(c) 2-1/8 1 1/8	2-1/8 1 1/8	R	1 1/4	45	1 1/4	45	.372	.015H	.015H	14B	6B	.015	.025	6B	2 1/8	Au	A	2 1/4	1.31	8 17	N 1 1/2	1 1/4	0-1/8	4 1/2	5		
12 IC	BH S	155 AC-45	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	F	1.88	45	1.63	45	.341	AA	AA	AA	TC	TC	.015	.027	5B	2 1/8	Au	A	2.46	2 1/2	7 24	N 3/4-0	1/4-1	5° 44'	6		
18 IC	BH S	155 AC-45	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	F	1.88	45	1.63	45	.341	AA	AA	AA	TC	TC	.015	.027	5B	2 1/8	Au	A	2.46	2 1/2	7 25	0-1/4 1/2	0-1/4 1/2	5° 31'	7		
18 IC	BH S	170 AC-45	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	F	1.88	45	1.63	45	.341	AA	AA	AA	TC	TC	.015	.027	5B	2 1/8	Au	A	2.46	2 1/2	7 25	0-1/4 1/2	0-1/4 1/2	5° 31'	8		
11 IC	BH S	180 AC-45	2(c) 2-1/8 1 1/8	2-1/8 1 1/8	R	1.50	45	1.37	45	.341	AA	AA	AA	8B	3 1/8	.015	.027	6B	2 1/8	Au	A	2	1 1/4	11 30	0-1/4 1/2	0-1/4 1/2	5° 31'	9		
22 C	OH O	AC-46	2-1/2 1-1/8	2-1/2 1-1/8	R	1 1/4	30	1 1/4	30	.340	.006H	.013H	.006	9B	3 1/8	.021	.040	5B	2B	Au	A	2 1/4	1 1/2	5 14	1 1/4-2 1/4	1/4-1 1/2	7° 10'	10		
22 IC	OH O	AC-46	2-1/2 1-1/8	2-1/2 1-1/8	R	1 1/4	30	1 1/4	30	.340	.006H	.013H	.006	9B	3 1/8	.021	.040	5B	2B	Au	A	2 1/4	1 1/2	5 14	1 1/4-2 1/4	1/4-1 1/2	7° 10'	11		
10 IC	LH G	145x AL-A7	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.340	.008H	.010H	.014	8B	3 1/8	.020	.025	TC	TC	Au	A	2 1/8	1 1/2	5 20	1/2-2 1/2	(a)	0-1/8	4 1/2-6	12	
31 IC	LH G	145x AL-A7	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.340	.008H	.010H	.011	2B	3 1/8	.018	.025	3B	1 1/8	Au	A	2 1/8	1 1/2	6 20	1-3	(a)	0-1/8	4 1/2-6	13	
55 IC	LH G	155x AL-AL7	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.340	.006H	.010H	.011	2B	3 1/8	.018	.025	TC	TC	Au	A	2 1/8	1 1/2	6 20	1-3	(a)	0-1/8	4 1/2-6	14	
10 IC	LH G	145x AL-A7	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.340	.008H	.010H	.014	8B	3 1/8	.020	.025	TC	TC	Au	A	2 1/8	1 1/2	5 20	1/2-2 1/2	(a)	0-1/8	4 1/2-6	15	
10 C	LH O	140x AL-A7	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.340	.006H	.008H	.011	6A	2 1/4	.020	.025	4A	1 1/8	Au	A	2 1/8	1	5 15	1-3	1/4-3/4	0-1/8	4 1/2-5 1/2	16	
44 Tr	OM O	150y Ch-H-10	2-3/8 1-1/8	2-3/8 1-1/8	F	1.28	45	1.28	45	.279	.013C	.013C	.013	9 1/2B	3B	.015	.025	4B	1 1/8	Au	A	1.60	1.54	4 15 2 8	1	1/4-1/8	8	17		
78 Tr	OM O	100 Ch-7	2-3/8 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.310	.013C	.013C	.013	9 1/2B	3B	.015	.025	4B	1 1/8	Au	A	2	1 1/4	5 22	1	1/4-1/8	8	18		
27 C	OH R	160x Ch-J-9	2-3/8 1-1/8	2-3/8 1-1/8	R	1 1/4	30	1 1/4	45	.341	.010H	.010H	.012	4 1/2B	1 1/8	.018	.025	TC	TC	Au	A	2 1/8	1 1/2	5 13 1/2	3-4	1	1/4-1/8	7 1/2	19	
27 C	OH R	120 Ch-J-9	2-3/8 1-1/8	2-3/8 1-1/8	R	1 1/4	30	1 1/4	45	.341	.010H	.010H	.012	4 1/2B	1 1/8	.018	.025	4A	1 1/8	Au	A	2 1/8	1 1/2	5 13 1/2	3-4	1	1/4-1/8	7 1/2	20	
11 C	HM G	115 Ch-J-8-A	2-3/8 2-1/2 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.341	.006	.008	.010	10 1/2B	4B	.020	.032	TC	TC	Au	A	1 1/4	1 1/2	4 12 1/2	2-3	1-1 1/2	0-1/8	7	21	
11 C	HM G	120 Ch-J-8-A	2-3/8 2-1/2 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.341	.006	.008	.010	10 1/2B	4B	.020	.032	TC	TC	Au	A	1 1/4	1 1/2	4 12 1/2	2-3	1-1 1/2	0-1/8	7	22	
11 C	HM G	120 Ch-J-8-A	2-3/8 2-1/2 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.341	.006	.008	.010	10 1/2B	4B	.020	.032	TC	TC	Au	A	1 1/4	1 1/2	4 12 1/2	2-3	1-1 1/2	0-1/8	7	23	
11 C	HM G	120 Ch-J-8-A	2-3/8 2-1/2 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.341	.006	.008	.010	10 1/2B	4B	.020	.032	TC	TC	Au	A	1 1/4	1 1/2	4 12 1/2	2-3	1-1 1/2	0-1/8	7	24	
11 C	HM G	118 Ch-J-8-A	2-3/8 2-1/2 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.341	.006	.008	.010	10 1/2B	4B	.017	.032	TC	TC	Au	A	1 1/4	1 1/2	7 17 1/2	2-3	1-1 1/2	0-1/8	7	25	
54 C	H G	107 Ch-7	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.341	.010	.013	.010	2B	3 1/8	.022	.027	7B	2 1/8	Au	A	2 1/8	1 1/4	6 18	1 1/4	1/4-1/8	8 1/2	26		
54 C	H G	113 Ch-7	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.341	.006	.013	.010	1A	3 1/8	.015	.027	7B	2B	Au	B	2 1/4	1 1/4	8 21 1/2	1 1/4	1/4-1/8	8 1/2	27		
92 IC	BH S	155x AC-45	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	F	1.88	45	1.63	45	.341	AA	AA	AA	TC	TC	.015	.027	5B	2 1/8	Au	A	2 1/8	2 1/2	7 25	N 3/4-0	1/4-1	5° 44'	28		
58 C	OM O	105 Ch-7	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.311	AA	AA	AA	21B	6 1/8	.020	.029	7B	2 1/8	Au	B	2 1/4	2	12 32	1 1/4	1/4-1/8	7 1/2	29		
44 Tr	OM O	105 Ch-H-10	2-3/8 1-1/8	2-3/8 1-1/8	F	1.54	45	1.54	45	.311	AA	AA	AA	19 1/2B	6B	.015	.029	4B	1 1/8	Au	A	2 1/8	1.57	5 30	4	1/4	4	30		
11 C	BH G	110 AL-B7	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.340	.015	.015	.015	CSM	CSM	.020	.025	4A	1 1/8	Au	A	2	1.42	6 20	1-2	0-1 1/2	0-1/8	7	31	
11 C	BH G	125 AC-45	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.372	.008H	.015H	.008	CSM	CSM	.020	.025	4B	1 1/8	Au	A	2	1.42	7 20	1-2	0-1 1/2	0-1/8	7	32	
10 C	BH G	125 AC-45	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.375	.015H	.015H	.015	CSM	CSM	.020	.025	9B	2 1/8	Au	B	2	1.24	7 18	1-2	0-1 1/2	0-1/8	7	33	
37 IC	BH S	146x AC-45	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	P	1 1/4	30	1 1/4	45	.341	.008H	.011H	(k)	5B	TC	.020	.040	TC	TC	Au	A	2 1/8	1 1/4	6 17	0-N 3/4	1/4-1	4° 51 1/2	34		
37 IC	BH S	152x AC-45	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	P	1 1/4	30	1 1/4	45	.341	.008H	.011H	(n)	TC	TC	.015	.030	2B	3 1/8	Au	A	2 1/8	1 1/4	7 21	0-N 3/4	1/4-1	4° 51 1/2	35		
54 IC	H O	110 AC-103	(2) 2-1/2 1-1/8	2-1/2 1-1/8	F	1.57	30	1 1/4	45	.340	.007H	.010H	1B	1 1/8	.020	.028	6B	2 1/8	Au	A	2 1/8	1 1/4	6 15	1 1/4-1 1/2	1/4-1 1/2	(e)	1° 54'	36		
b) IC	H O	110 AC-103	(2) 2-1/2 1-1/8	2-1/2 1-1/8	F	1 1/4	30	1 1/4	45	.340	.007H	.010H	1B	1 1/8	.015	.028	8B	3B	Au	A	2 1/8	1 1/4	6 16	1 1/2-1 1/2	1/4-1 1/2	(e)	1° 54'	37		
69 IC	H O	110 AC-103	(2) 2-1/2 1-1/8	2-1/2 1-1/8	F	1 1/4	45	1 1/4	45	.340	.006H	.008H	30B	12 1/2B	.015	.028	6B	2 1/8	Au	B	2 1/8	1 1/4	8 20	2 1/2-1 1/2	1-1 1/4	(f)	1 1/2	38		
41 IC	BPH O	110 AC-103	(2) 3-1/2 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.340	AA	AA	TC	TC	.020	.028	6B	2B	Au	B	2 1/8	1 1/4	10 40	(d)	1-1 1/4	(f)	1 1/2	39		
90 C	LH O	145x Ch-J-8	2-1/2 2-3/8 1-1/8	2-3/8 1-1/8	F	1 1/4	45	1 1/4	45	.340	.006H	.008H	.011	6A	2 1/4	.020	.025	4A	1 1/8	Au	A	1 1/4	1	5 14	3-5	1/4-3/4	0-1/8	4 1/2-5		

C.S.R.A.—A.A.A

(Continued from page 28)

County Fairgrounds, Chicago; the Illinois State Fair, Springfield; and the Wisconsin State Fair, Milwaukee. In the mid-west territory, too, is the historic Indianapolis Motor Speedway where the 500-mile international sweepstakes is run each May 30 under AAA supervision.

Under the purported agreement, CSRA activities would invade the eastern territory more forcefully than in the past. The CSRA's major holding in the east is the one and one-eighth mile dirt track inside the fa-

mous board speedway site at Altoona, Pa. Other eastern activities of the CSRA are in the Pittsburgh, Pa., sector.

While the AAA is recognized as the "daddy" of all auto race supervision, the CSRA is a "youngster" in the fold. The Central State group grew out of the Dayton (Ohio) Speedway which opened in 1934 under AAA supervision. In 1935 the Dayton track went "on its own" and the supervising body there extended itself to an organization for other tracks of the area. The CSRA headquarters are in Dayton. The AAA maintains its quarters in the national offices of the automobile association in Washington, D. C.

A similar agreement between the AAA and the International Motor Contest Association—a far mid-western group—was short-lived some eight years ago.

Under the present rules, drivers registered with the AAA and with the CSRA are not permitted to compete in races sanctioned outside of the respective organization.

Portable Brush Electroplating Outfit

The Portable Plating & Equipment Co., 1000 So. Michigan Ave., Chicago, Ill., has announced a new portable brush electroplating outfit known as SUPER PLATER, for electroplating small objects with either copper, nickel or silver. For the car dealer this



small outfit is handy for replating headlight reflectors and for touching up the bright parts of the car where the chrome plating has peeled off.

Application of the plating compound is made with a brush in which an anode is located; one wire from the rectifier attaches to the brush and the other wire to the object being plated, thus completing the electrical circuit. SUPER PLATER kit consists of a small transformer and rectifier unit which plugs in to the regular light socket, a brush, and a supply of cleaning and polishing compound as well as jars of copper, nickel and silver plating compounds. The complete outfit sells for \$12.95.

The Portable Plating & Equipment Co. makes larger units ranging in price from \$77.50 upward, for industrial use. For complete information write the manufacturer.

Marking Pencils Made of Paint

The Lake Chemical Co., 6 East Lake St., Chicago, Ill., has introduced a new marking pencil which is actually paint. Called "Stick-O-Paint," these new markers are real paint, and are supplied in six colors. They are claimed to be moisture-proof and fade-proof and can be used on glass, tires and parts. "Zephyr" paint sticks are five inches long and one-half inch in diameter. "Ready Markers" are slightly smaller.

"Stick-O-Paint" markers come six to a box in white, black, red, yellow, blue and green, cellophane wrapped. Write for samples, literature and prices.



**GIVE ME 30 MINUTES
AND I'LL GIVE A
PERMANENT REPAIR TO
COOLING SYSTEM CRACKS**

That's no idle boast. Sure-Weld gives a permanent repair to cracks in valve ports, cast iron and aluminum cylinder heads, inside cracks and water jackets.

And most amazing of all, it does the whole job in 30 minutes' time.

Sure-Weld is new. But it's tried and firmly guaranteed on a "money-back" basis. It will not clog radiators and has a cleansing effect on the entire cooling system.

Sure-Weld makes friends by making satisfied customers. It leads to generous profits. Order from your jobber now and cash in on Sure-Weld profits.

SURE-WELD



**LET ME REMOVE RUST
AND RUST-PROOF ALL
METAL WITH-
OUT DRAINING THE
COOLING SYSTEM**

Kleerust not only removes cooling system rust, but rust-proofs all metal for an entire year. Think of it! Without draining the cooling system, Kleerust goes to work. The car is operated as always, and within a month Kleerust has not only completed its job, but even the original water will have returned to its former crystal clearness. In winter it even adds a protective seal to anti-freeze and does not curtail its efficiency in any way. Your customers will welcome Kleerust. Be sure you can supply them. Your jobber has Kleerust.

Dealers' net price
60¢ pint in doz. lots
Slightly higher
in Canada

KLEERUST



**YOU CAN'T
BEAT THE
PROFITS I
SHOW ON HEAD-
LIGHT REFLEC-
TOR JOBS**

Sure-Plate silvering equipment will make you headquarters for headlight reflector business. And the cost of the complete equipment is so low that it will pay for itself with the first dozen jobs.

"B" Assortment
\$12.50 net to dealer
Slightly higher
in Canada

The average cost per pair of reflectors to you is only 25¢ . . . on jobs that normally sell for \$2.00 to \$3.00. Get in on this extra profit now. Order Sure-Plate from your jobber today.

SURE-PLATE

IN CANADA
SURE-RITE PRODUCTS, Canada, Ltd.
20 HAYTER STREET, TORONTO

EXPORT DEP'T.
REX-HIDE EASTERN, INC.
33 W. 60TH STREET, NEW YORK CITY

SURE-RITE PRODUCTS CORP., 6010 N. CAMAC ST., PHILA., PA.

The Name **ALTINIZED**

***If they're not ALTINIZED
... they're not as good!***

The name ALTINIZED comes from AL—Alloy; TIN—tin base (Tin Base Alloy).

Experience has proved that tin is the best bearing material available. A coating of tin base bearing alloy is now electrically applied to the surfaces of Super-X Rings. This exclusive finish gives these famous rings performance features no other spring expander rings can possibly have. And they have eye appeal . . . they're clean, white, good looking.



**Made to *OUTPERFORM*
Priced to *OUTSELL!***

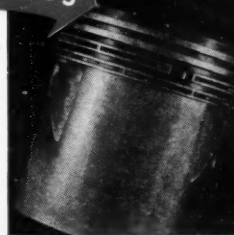
This Piston Fitted with USUAL RINGS



Here is reproduced the actual unretouched photograph of a piston fitted with usual rings and run in a motor. It shows the rings and piston were both badly scuffed and worn during the break-in period. The rings have never seated. Proper

sealing action of the rings is impossible due to worn surfaces. Impaired ring condition extended into the piston making it impossible for the whole assembly to give proper service.

This Piston Fitted with ALTINIZED RINGS



This reproduction of an unretouched photograph of a piston fitted with Altinized Super-X Rings and run in a motor under the same conditions as the piston at the left shows that there was practically *no scuffing or wear on rings or piston during the break-in period*. The rings are properly seated. The sealing action is positive due to the

Altinized Finish. *Ring operation is successful and the whole assembly operates efficiently.*

If they're not ALTINIZED... they're not as good!

**FASTER SEALING
AGAINST
OIL AND GAS**

**NATURAL WEAR LIFE
INCREASED 33⅓%
BY ACTUAL
TESTS**

Super-X

REG. U. S. OF A. PAT. OFF.

**PISTON RINGS
KING QUALITY**

Balanced Power

(Continued from page 13)

are actually two carbon deposits on the insulator—one begins at the gasket seat and works toward the tip of the insulator. The other starts at the tip and works back toward the gasket seat. When these two deposits meet the plug is shorted. In cases of gas fouling, the plugs should be cleaned and the carburetor reconditioned and adjusted.

When a plug is fouled as the result of excessive oil in the combustion

chamber, the deposit on the plug will be a wet oily carbon. A hotter plug may be used to overcome the effects of the engine's condition but the better plan is to recondition the engine.

Incorrect spark plug gap will also cause a plug to foul. A wide gap will cause missing at high speeds and the wet unburned fuel will be deposited on the plug. Then the next time the plug is fired, the fuel will be burned to carbon which will adhere to the core of the plug. In a similar manner too close a gap will cause a plug to foul. But in such cases the missing occurs at low speeds. Any faults in the ignition system which will cause

an intermittent or weak spark at the plugs will result in fouling.

Another deposit that will be found on spark plugs is a yellowish substance which is caused by Ethyl gasoline. The color of this deposit will vary with the amount of Ethyl used in the fuel, but it does not affect the operation of the plug and if the plugs are otherwise in good condition they should be reinstalled.

Plug insulators should also be checked for cracks—not only at the electrode tip but also above the shell. When the top is cracked it invariably indicates that the plug has been struck or otherwise carelessly handled. If the tip is broken, it generally indicates that some mechanic has attempted to adjust the gap by bending the center electrode.

Carbon streaks on the insulator top will indicate a leak between the shell and the insulator top. In most cases, plugs which show signs of blow-by are also badly burned. Such plugs have generally been tightened with an end wrench or otherwise abused.

TURN DENTS into DOLLARS



SET No. BF-102

New HERBRAND Streamlined BODY and FENDER TOOLS make it easy and profitable to handle repair work on modern streamlined cars

Make car owners' tough luck your good fortune and turn bumps into dollars.

Be prepared to do the job right by being equipped with the new Herbrand Streamlined Body and Fender Tools, Files and Holders. . . . These tools and others made by Herbrand can be bought individually or in sets such as Set No. BF-102 (illustrated).

These tools are matched—balanced—distinctive—original. . . . Forged from chrome

alloy steel—no castings. This new line is the standard of excellence, and stands pre-eminent in the body and fender repair field. It includes all types of Hammers, Spoons, Anvil Dolly Blocks, Compound-Action Forming Pliers, Non-Clogging Files, Hand-Fit Holders, Hinge Pin Pusher, etc.—any repair shop needs to speed up work and produce it on a profitable basis. Get details NOW!

The Herbrand Corporation, Fremont, Ohio

MAIL THIS COUPON FOR COMPLETE INFORMATION

GET FREE 210
PAGE TOOL MANUAL



Also send
for 40 page
Booklet of
New Tools

THE HERBRAND CORPORATION, Fremont, Ohio

- ☐ Send Details on Streamlined Body and Fender Tools
☐ Send TOOL MANUAL No. 50-M FREE
☐ Send New 40 Page Booklet No. 50-MS

NAME
FIRM NAME
ADDRESS
CITY STATE

Sure-Rite Opens New Warehouse

Sure-Rite Products Corp. has announced the opening of a new warehouse in Dallas, Texas, to be known as Automotive Industries Service, Inc., at 2033 Commerce St.

The company also recently established a new branch in Toronto. Warehouse stocks have been set up in Winnipeg and Vancouver.

The Sure-Rite Corp., makers of Sure Weld, Sure-Plate and Kleerust, has announced several additions to its sales personnel. Lionel Sanger will represent the company in Kansas, Iowa, Nebraska and Missouri. Glenn Crandell will travel Washington, Oregon and Idaho. W. W. Foster and Frank Buhler will cover the northern California and Nevada territory.

Portable Electric Torch Operates on Light Socket

A portable electric torch which operates from 110 volt AC or DC circuit has been announced by the Electric-Torch Co., 2613 S. Michigan Ave., Chicago, Ill. Known as the 3 in 1 Electric Torch, it is claimed by the manufacturer that it will weld, braze and solder with a high degree of ef-



ficiency, and yet sells for an extremely low price. The outfit comes complete with various kinds of rod—even aluminum. For complete information and prices, write the manufacturer.

Grey-Rock CONTEST

FASTEST GROWING LINE"

75 PRIZES—ALDEN-COWDREY BRAKEOMETERS (Value \$12.50 Each)

Gilbert S. Albrecht, Kenilworth Service Station, Kenilworth, Ill.
Toby Ballew, Addison Miller, Inc., Sargent Bluff, Iowa
R. R. Beezley, Beezley & Hall, Memphis, Tenn.
Henry Albert Bieber, M. & G. Convoy, Inc., Buffalo, N. Y.
Fred Boehme, Continental Baking Co., San Francisco, Calif.
Orie Braschler, Braschler Auto Service, Coffeyville, Kans.
Charles Brice, John's Super Auto Service, Bellaire, Ohio
Marion Burke, Marion Burke Garage, Muskogee, Okla.
C. Doug Burlile, Boise Auto Company, Boise, Idaho
Elmer Chilson, Firth Garage, Firth, Idaho
T. J. Conway, Jr., Thornton-Fuller Co., Philadelphia, Pa.
Quay F. Cook, Cook's Garage, Hagerstown, Md.
M. L. Cummings, Cummings Garage, Syracuse, N. Y.
M. L. Cuthrell, Cuthrell's Garage, Swan Quarter, N. C.
R. G. Dasse, J. Leo Johnson, Inc., Burlington, Vt.
Wes Dawdle, North Cache Motor Co., Smithfield, Utah.
Joe De Vous, De Vous Garage, Equality, Ill.
James L. Dietz, Dietz's Repair Shop, Randallstown, Md.
Erby L. Divine, Deans Garage, Lexington, Ky.
Arthur Easley, Texarkana, Ark.
Harry E. Eaton, Harry Eaton Automotive Ser., Inc., Portland, Ore.
Ted Farmer, Dakota Motors, Wahpeton, N. D.
B. F. Ferrell, Ferrell Service Sta. & Garage, Clarksburg, W. Va.
William F. Finley, Finley's Garage, Linwood, N. J.
Howard R. Graham, Wilson Oil and Gas Co., Laramie, Wyo.
J. M. Hagan, Hagan Motor Co., Bellefonte, Pa.
Chester Hanson, A. Hanson & Son, Big Bend, Wis.
Homer H. Hill, Levin's Brake Co., Birmingham, Ala.
Otha S. Huckaba, Safety First Garage, Sugar City, Colo.
T. D. Inabinet, Strickland Motors, Inc., Sanford, Fla.
James Irving, White Distributors, Ltd., Vancouver, B. C.
Lyle Jackson, The Powerseal Company, Los Angeles, Calif.
C. E. Jones, City Garage, Meridian, Miss.
Owen J. Jones, C. C. Cooper Motor Co., Harrisburg, Pa.
G. V. Keller, G. V. Keller Garage, Lincoln, Nebr.
Ross Kennedy, Kefflers Garage, Tacoma, Wash.
W. B. Kennedy, Motor Service Co., Magee, Miss.

Walter Kintz, Ice Delivery, Inc., W. Wayne, Ind.
Walter B. Koch, Hirschert Olds, Inc., Hackensack, N. J.
A. S. Kytte, Marr Motor Co., Marietta, Ga.
Clarence Laycock, Moulder Motor Co., South Bend, Ind.
Thomas Linney, George's Garage, New Bedford, Mass.
Howard Loughin, Downingtown Motor Co., Downingtown, Pa.
E. N. Loveless, Blazemar Garage, Taylor, Tex.
Cecil McCaslin, Lloyd & Rapp Motors, Pasadena, Calif.
G. R. McDowell, Amarillo, Tex.
Bob Mason, Tri State Fuel Co., Kansas City, Mo.
L. A. Mason, Seven Up Bottling Co., Richmond, Va.
Leonard E. Melanson, Cornelius Garage, Cornelius, Ore.
Carl E. Merritt, Waterloo Laundry Co., Waterloo, Iowa
George L. Michel, Union Electric Co. of Mo., St. Louis, Mo.
Walter J. Moellering, Vienna Brewing Co., Cincinnati, Ohio
Myron E. Morrison, Morrison's One-Stop Serv., Las Vegas, N. M.
David W. Oliver, Standard Auto Parts, Oakland, Calif.
Gust Orbom, Parker Motor Co., Minot, N. D.
George C. Oubre, Modern Chevrolet Co., Orange, Tex.
S. Parisy, Southwestern Gas & Electric Co., Shreveport, La.
D. M. Quayle, Fleenor Pontiac Co., Mt. Pleasant, Iowa
E. C. Richardson, Safety Motor Transit Corp., Roanoke, Va.
J. Spencer Rork, Ray H. Mullen Motor Co., Paducah, Ky.
Marie E. Schuetze, Phillips Motor Co., Burlington, Iowa
George W. Scovil, Oscar Hall Co., Escondido, Calif.
Buck Simpson, Lincoln Service Station, Evanston, Wyo.
D. U. Smart, D. U. Smart Garage, Forest City, N. C.
Clarence Spaeth, Spaeth's Garage, Detroit, Mich.
John W. Spalding, Pure Oil Co., St. Paul, Minn.
Laudie A. Sparrow, Grand Ave. Batt'y & Ignition Co., Chicago, Ill.
Emery E. Summers, Summers Brake Service, Helena, Mont.
George Gordon Tharpe, Macon Ambulance Co., Macon, Ga.
Maurice W. Thomson, Warner Company, Wilmington, Del.
Herbert W. Timm, Grant Motors, Inc., Spokane, Wash.
Lester Tripp, O. B. Andrews Company, Chattanooga, Tenn.
S. E. Vanderveen, Hoekstra Dairy Prod. Co., Grand Rapids, Mich.
C. N. Weston, Weston's Auto Repair Service, Phillipsburg, Kans.
Frank L. Yeager, Camp Perry Garage, Clarks Mills, R. D., Pa.

50 PRIZES—\$5.00 EACH

Charles G. Adams, Winnipeg Elec. Co., Winnipeg, Man., Canada
H. G. Averill, Laird Johnson, Inc., Rutherford, N. J.
W. R. Ayers, Gilman Motor Co., Scottsbluff, Nebr.
Florian Bauerlein, Railway Express Agency, Erie, Pa.
Louis F. Bernard, Toy Bros. Yellow Cab Co., New Orleans, La.
James Brookman, McNish and Vasburgh, Fonda, N. Y.
R. G. Brown, Brown's Garage, Halifax, N. S., Canada
Jake Brozosky, The Roosevelt Garage Corp., Chicago, Ill.
Lambert R. Butz, Earl Stoyer, Schuylkill Haven, Pa.
George Corbe, Marvin Leach Garage, Ashland, Pa.
Frank R. Costello, Dairyland, Inc., San Antonio, Texas
Edward Cucurello, Bishop, McCormick & Bishop, Brooklyn, N. Y.
George H. Dicks, T. G. Walker—Contr. & Exc., Claysville, Pa.
Charles W. Faris, Reid Bros. Expr. & Trans. Co., St. Louis, Mo.
Theodore F. Fornoff, Jersey Bread Co., Paterson, N. J.
William Gillespie, Boston & Maine Trans. Co., Cambridge, Mass.
A. E. Gosselin, Progressive Auto Works, Los Angeles, Calif.
David J. Hanley, Bee Line, Inc., Rockville Center, N. Y.
Russell Harmon, W. B. Davis Motor Sales, Somerset, Ohio
Ben Heimlich, Eureka Motor Service, Denver, Colo.
Allen L. Hildebrand, A. Scheidt Brew. Co. Garage, Norristown, Pa.
C. R. Hersh, F. F. Wye Works, Altoona, Pa.
John Hladik, Koters Motor Sales, Litchfield, Conn.
Howard W. Holt, Albuquerque, N. M.
Ralph S. Hunt, Jr., Rudes Service Station, St. Michaels, Md.
Joseph Junglas, Junglas Garage, Easton, Pa.
A. C. King, A. C. King & Sons, Knoxville, Tenn.

Albert F. Komara, Tiny's Garage, Johnstown, Pa.
Antone F. Kowalski, Wall Street Auto Service, Portland, Ore.
Arthur Kulosa, Frank's Garages, Chicago, Ill.
George Lepard, Sunshine Service, Calgary, Alberta, Canada
William L. Lynam, Lynam's Garage, Newport, Del.
Gordon T. MacEwan, Mill Bay Garage, Cobble Hill, B. C., Canada
Victor J. Miller, Triangle Shoe Co., Inc., Wilkes-Barre, Pa.
James A. Mitchell, Swift & Co. Garage, East St. Louis, Ill.
R. J. Obermyer, Humboldt Garage, Wood Ridge, N. J.
John Perlie, John's Super Auto Service, Bellaire, Ohio
C. Raymond Plotts, Pierson's Garage, Media, Pa.
George E. Schuessler, Pioneer Garage, Red Wing, Minn.
Alexander Smith, Al Smith's Ser. Sta., Hastings-on-Hudson, N. Y.
B. Spaulding, Edw. Rendert & Son, Averill Park, N. Y.
Jack Spencer, Jack Spencer Auto Collision Wks., San Diego, Calif.
Rex Street, Street's Garage, Columbus, Ohio
E. D. Stubblefield, Central Freight Lines, Inc., Dallas, Tex.
D. L. Tomberlin, Auto Brake and Service, Miami, Fla.
Sterling Wallace, Brown Bros. Coal Co., Cleveland, Ohio
Fremont W. Wood, Seymour's
Tire & Battery Shop, Ashtabula, Ohio
George Wright, Gulf Refining Co., Tippecanoe City, Ohio
Robert R. Young, Ralph S. Snave-ly, Manheim, Pa.
Mrs. Cy Young, Cy Young's Garage, Bartlett, Tex.

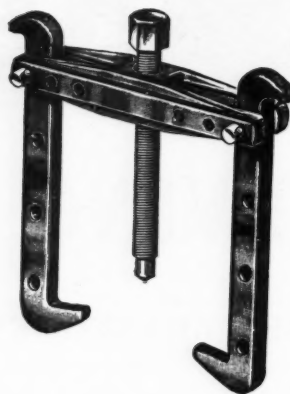
UNITED STATES ASBESTOS DIVISION of Raybestos-Manhattan, Inc., MANHEIM, PA.
BRAKE LININGS • CLUTCH FACINGS • FAN BELTS • HOSE • PACKINGS • RELINING EQUIPMENT



BRAKSETS • BALANCED BRAKE BLOCKS

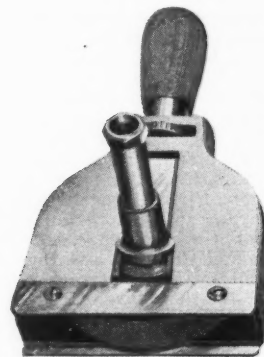
Gear Puller Has Reversible Arms

Duro Metal Products Co., 2649 North Kildare Ave., Chicago, Ill., has introduced their No. 255 heavy duty gear puller with forged head and reversible arms. The special features are the quick action and adjusting pins which are held in the head by means of friction balls and allow reversing or adjusting the arms with a minimum of trouble. The arms are 8 in. long with four adjustments in height, and the cross head is 7 in. long with three adjustments ranging from 3 in. to 6 in. in width.



Rotary Plane For Precision Grinding

The Stevenson Rotary Plane announced by Hardware Specialty Co., Withee, Wis., is a new light weight portable grinding machine using a $\frac{3}{4}$ x 4 in. grinding wheel that is adjustable to $\frac{1}{2}$ thousandth of an inch cutting depth. Hardened steel bottom guides allow steady and smooth operation over the working surface. An adjustable dresser which keeps the wheel round and true is supplied with



each unit in addition to coarse and medium wheels. The machine is operated from a flexible shaft at a recommended speed of 3400 r.p.m., and may be driven by $\frac{1}{2}$ to $\frac{3}{4}$ h.p. motor. It weighs only 2 $\frac{3}{4}$ lbs., and is beautifully finished in red and chromium, with a natural varnished wood handle. For complete information, write the manufacturer.

Tune-Up Oil Is Sludge Remover

A new tune-up oil that is claimed to be also a sludge remover will soon be placed on the market by The Rust Master Co., 1 Beacon St., Boston, Mass.

Known as King Oil, this product is added to the crankcase oil and it is



claimed that all carbon and carbon sludge in valve guides, piston rings, oil strainers and oil passages will be removed within 3 $\frac{1}{2}$ to 4 $\frac{1}{2}$ minutes. King Oil is also used as a break-in oil in new motors and is guaranteed by the manufacturer to be harmless to any oil or lubricants and to metal bearings including cadmium and copper lead. King Oil contains no kerosene or carbon tetrachloride.



EIS BRAKE FLUID

"The Pioneer of Better Fluids"

100% PERFORMANCE

ALL of the shortcomings common to ordinary fluids have been eliminated in this "advanced formula" brake fluid—the product of laboratory experiment based on scientific chemistry—not guesswork. EIS Brake Fluid gives 100% performance because it is 100% correct in formula.

Contains no water or acid to cause corrosion of metal or deterioration of rubber parts. Chemically stable, hence doesn't change under heat or pressure. Has an abnormally high boiling point and low freezing point. Its high viscosity makes it more economical. Its greater oil content gives it higher lubricating efficiency.

Absolutely mixes with all fluids that car and truck manufacturers recommend.

NEW LOWER PRICE SCHEDULE NOW IN EFFECT

"THE COMPLETE BRAKE PARTS LINE"

Eis Brake Cables and Parts

Insure satisfactory results on all replacements. Used and endorsed by discriminating brake stations.

EIS CUPS ARE TOUGHER

Engineered and designed for replacement use. Ask us to send you a

"Tear-Test" Card With Sample

and convince yourself of "the toughness that defies tearing." (Name size desired)

Write today for catalogs and prices on Eis Brake and Underbody Fluids—Eis Brake Parts—and Eis Brake Servicing Accessories.

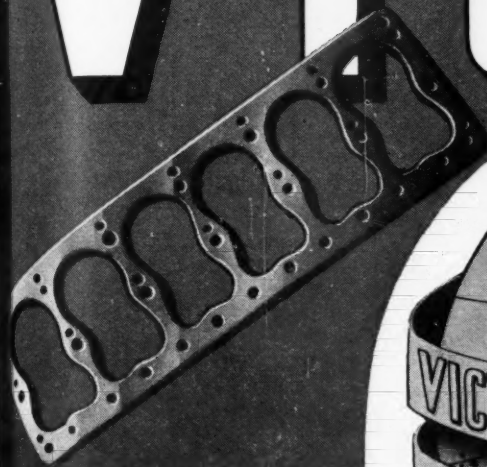
EIS MANUFACTURING COMPANY, INC.

1365 Jerome Avenue

New York



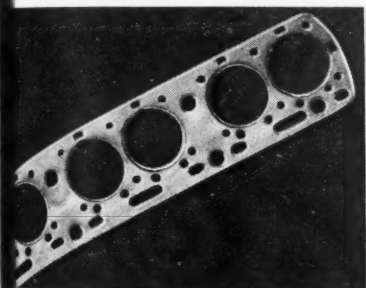
VICTOR



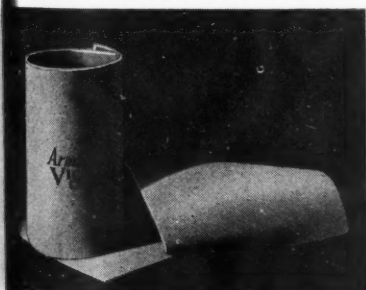
VICTOR COPPER ASBESTOS GASKETS



VICTOPRENE OIL SEALS



STEEL AND ASBESTOS GASKETS — PRECOATED



ARMSTRONG-VICTOR CORK PRODUCTS

THE WORLD TURNS TO VICTOR FOR BETTER SEALING PRODUCTS

If you want sealing products that are modern . . . engineered for the requirements of today . . . precision built by specialists that have led in the development, manufacture and sale of sealing products for 29 years, USE VICTOR SEALING PRODUCTS. If you want better performance . . . better satisfied customers . . . sell the world's leader—Victor. You'll find the COMPLETE Victor Line simplifies ordering and handling.

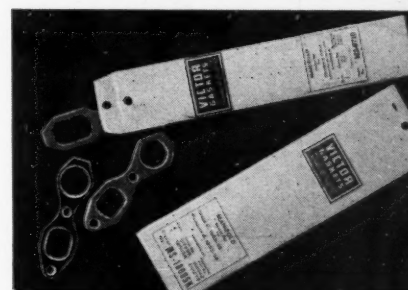
. . . and if you want the most complete and authentic gasket data ever released to the automotive trade send for Victor Gasket Guide No. 12. Other exclusive Victor Publications have also been prepared for the industrial field and automotive engineers.

VICTOR MANUFACTURING & GASKET CO.

P.O. Box 1333 • 5750 Roosevelt Road
CHICAGO, U.S.A.



"—AN OIL BASE COMPOUND"



MANIFOLD GASKETS IN SETS



VICTORITE FIBROUS SHEET PACKING



CORK GASKETS IN SETS



VIGASCO, — A QUALITY GASKET CEMENT

THE WORLD'S LARGEST GASKET MANUFACTURER

Jobbers and Independents

(Continued from page 18)

business grows the more desirable an account you become for my competitors."

"Oh yeh!" said Jones. "And yesterday a guy was around here from one of the big car factories offering to make me an 'authorized' station for their cars, provided, of course, that I bought my parts from them."

"What'd you tell him, Bill?" asked O'Hara.

"Don't be silly," replied Jones. "What would I tell him? In the first place I told him that you and the gang at Auto Supply had had a real part in helping me build this business. I told him how you had advised me to put in a battery department, and then an ignition setup, and then a lift and lubrication equipment, and then a line of accessories. I told him how you had financed each group of equipment so that I could pay for it out of profits. I told him how you had personally helped me plan each of these departments, how you helped me install the equipment, how you showed our men how to do the work and how you showed me how to talk

to customers, how to intelligently use direct mail advertising which you got for me from the manufacturers you represent. Oh, I told him plenty and I wound up by telling him that I wasn't interested in his cars any more than I was in the cars of all other makes, and that my source of supply had to be ready to supply parts for any and all cars when and as I needed 'em."

"Gosh," said O'Hara, "you surely did give him an earful!"

"Yes," said Jones, "and that isn't all I could have told him. You see, O'Hara, your house handles good nationally advertised lines and I—maybe I should say 'we,' you and I—have built up a nice business on them. My customers are sold on the batteries, the oils and lubricants, and the other things we handle, and as long as your house gives us a fair break we'd be chumps to switch and have to resell all of our customers on new lines."

"Well it looks like we have really grown to be partners," said O'Hara, "and here's my hand again that we'll keep right on working with you in every way we can. Here, sign this order and I'll be getting on my way."

"O.K." said Jones, "see you in a few days. S'long."

It is still Monday. It is now after lunch. As Jones comes in, Jimmy, his other mechanic, tells him that they have a "ring" job in the shop which will be "down" by 4:00 o'clock and he'd like to have Auto Supply send one of their shop men over at that time to "mike" up the cylinders and pistons.

Another call to Auto Supply. "Sure," says the head of the Mechanical Service Department. "Charlie will be there at 4:00 sharp." And he is. He and Jimmy carefully go over the job; decide what type of rings to use—how to correct the piston skirt collapse—check the pins, rods, etc. Charlie then takes the piston assemblies with him to the Auto Supply Company's completely equipped machine shop. Here the rods are aligned, pistons properly corrected, and the complete assemblies returned the next morning to Charlie for reinstallation. And when they go back Charlie will send along that set of brake drums which were sent over for grinding and truing.

Now it's nealy closing time and as Mike sets up the battery line he finds the rectifier bulb has burned out. "Gosh, those batteries can't stand all night"—and they won't. It only takes 6 minutes to run down to Auto Supply—and someone is always there 'til 6:15 or 6:30.

This time the boss hops in the car and runs down after the bulb while Mike and Jimmy get ready to close. And again the jobber saves the day. Of course he has the rectifier tube in stock—lots of them for just such emergencies.

That night Mrs. Jones was talking to Mr. Jones. "You know," she said, "the service you get from that Auto Supply Company is really remarkable. I was at the shop for a couple of hours today and in that time you called them four times. And are they on the job! Why the department stores are always talking about the service they have to give us women."

ANNOUNCING THE NEW---SENSATIONAL

Road Service Jack

with patented

QUICK REMOVABLE HANDLE



Illustration above shows how slight finger pressure on two levers removes handle. Illustration at right shows how easy it is to put this jack in a service car. Ask your H-W Jobber, or write us for details.



• Designed at the request of garage mechanics and tire service men.....

This new Hein-Werner Hydraulic Jack can easily be carried to the job in any service car. Easy to lift . . . Easy to position . . . Weight of jack only 73 pounds . . . Weight of handle only 11 pounds.

Quick removable handle . . . No bolts or pins to be taken out . . . Slight finger pressure on two levers removes handle . . . Just as easy to put back . . . No tools required . . . Built Right—Priced Right.

MODEL "W"

\$24.50

NET TO DEALER
(TAX INCLUDED)

When used in the shop, handle can be removed after car is jacked up or when jack is stored under work bench . . . Length of jack 25" . . . Length of handle, extended 47½" . . . Low point 4" . . . Saddle high point 20" . . . Saddle 6½" diameter . . . Capacity 3000 pounds . . . Dealer's price, \$24.50 (West Coast slightly higher).

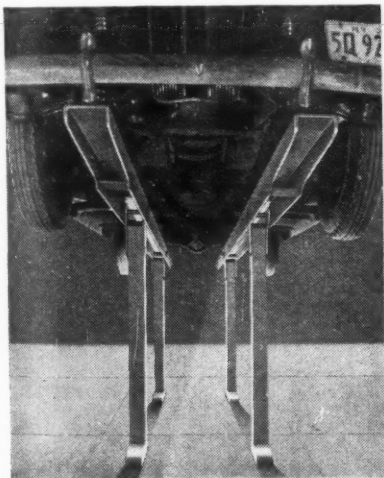
HEIN-WERNER MOTOR PARTS CORP. Waukesha, Wis.

Boy, oh boy—those department store people ought to see what service you get from your jobber! And I pay full retail price for what I buy while you're buying at wholesale."

Yes, it takes a lot of different kinds of things to help 100,000 dealers keep 26,000,000 automobiles and trucks running on the highways and byways of these good old United States, and unless my experience has been all screwy, then, sez I, there'd be a heap of a mess getting all this stuff to the service stations of America if it weren't for the jobbers. Maybe this doesn't make sense "economically," but I maintain that, like the suggestion about "squirting water from a shower head on tin"—it is something to think about.

New Lift Has No Cross Members

A new type of pneumatic auto lift which has no cross members and provides a completely unobstructed working space for under-chassis work has been introduced by the Auto-Lift Corp. of America, 9-17 37th Ave., Long Island City, N. Y. Illustration shows the lift extended—when collapsed the supporting legs are concealed under the side rails. Operating entirely by air with no oil, it is said that the lift can be operated



with ¼ hp. air compressor and an 18-gal. tank, and that it requires only 12 lb. of air pressure for each 1000 lb. live load. Provided with automatic safety locks. Can be installed over basements or second floors with no obstruction below. For complete information and prices, write the manufacturer.

Perfection Heaters Feature Air Conditioning

The new line of Perfection heaters, made by the Eaton Products, Inc., 739 East 140th St., Cleveland, Ohio, features a direct fresh air intake through an air-filtering material before the air is heated and blown into the car. This air intake attachment is available for all the Perfection heaters at a slight extra cost. Heater units are attractively finished and competitively priced.

Canine Comfort

Service stations, the American Petroleum Institute reports, are getting doggy. Or hasn't your rumble-seat pooch heard about the new canine restroom at a service station in Danbury, Conn.?

Let him jump out and look it over some time! Streamlined drinking trough, and a nice, comfortable dog house, where a tired pup can catch up on his back sleep, without moving over for hitch-hikers.

All the dog-lovers in Danbury, dog-raising Mecca of Connecticut, are dropping in to see the new super-ser-

vice feature. Rival operators are burning up, but so far there have been no charges of unfair competition.

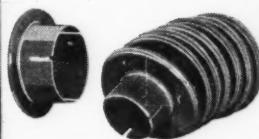
As one competitor, with a miniature zoo, remarked, "Why should I worry if he lets his station go to the dogs?"

Bantam Offers Trailer

A steel trailer with 750-lb. payload capacity has been announced by the Bantam Trailer Sales Co., Butler, Pa. Inside dimensions of the unit, which weighs 450 lb., are: length, 82½ in.; height, 43½ in.; width, 49½ in. The tread measures 56 in.

SIMMONS MUFFLERS

have PATENTED END ADAPTERS



SIMMONS Tail Pipe Display Stand

Your jobber can supply this handy and attractive tail pipe display stand. It holds 53 pipes. Keep pipes on display where customers can see them, and make the added profit that comes from selling a pipe with every muffler replacement.



Mail now

Fitting any Simmons group type muffler to a particular car requires only the selection of the correct size end plate from the complete set packed with each muffler—then a few quick turns of the screw driver fastens it securely in place. Slotted neck facilitates slipping pipe into position and assures a perfectly tight fit around the pipe.

Individual packaging of muffler, complete with end plates, clamps and bracket saves time and gives the mechanic all needed parts when making a muffler replacement.

This Catalog SAVES YOU TIME

No waste time figuring which muffler is needed for any replacement—Simmons Catalog No. 311 tells you at a glance. Ask for your copy.



The SIMMONS MANUFACTURING CO. ASHLAND, OHIO

SEND NEW MUFFLER CATALOG TO:

Name _____
Address _____
City _____ State _____

Manufacturers of
Silver King and Power
King Hydraulic Jacks;
Mufflers for all cars; Car-
buretors for all cars;
replacements for Ford,
Chevrolet and Plymouth.

Betting on Auto Races Squelched at Midget Track

The first known approach to betting on automobile races was nipped within a week at Roosevelt Raceway, on Long Island, where midget events were begun July 9.

The district attorney of Nassau County was said to have hauled the promoters before the grand jury on July 14 in a probe of "participation certificates" said to have been sold for \$2 each to the fans who were to share a \$5,000 "side purse."

Prior to the district attorney's probe, the Raceway midget events had

been staged four nights. On July 16, the Raceway midget group began a new schedule which called for midgets Wednesday and Saturday nights without the "participation certificates." The new schedule was to be continued "until further notice" with the drivers being paid \$1,200 prizes each night for eight events.

The original schedule called for the midgets to operate each night of the week except Sunday and continue into September.

The future policy was in doubt pending report of the district attorney's office regarding the purported betting.

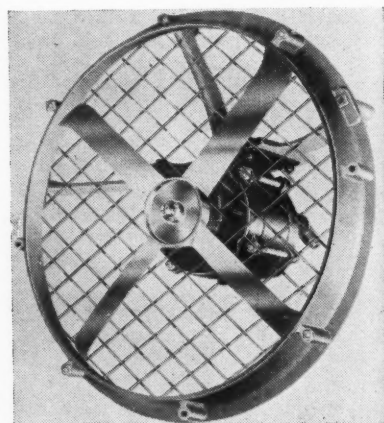
While the midgets at the Raceway

were said to be operating independently, it was reported at national headquarters of the American Automobile Association's Contest Board that the AAA had refused to sanction the proposition.

While midget competition steadily increased with each new week, the AAA Contest Board reported opening of a new one-fifth midget track in West Philadelphia, Pa., on June 23.

New Exhaust Fan For Paint Booth

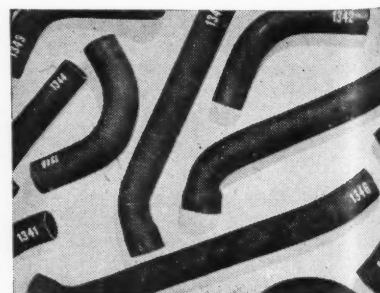
A new exhaust fan, designed to effect rapid movement of a large volume of free air, has been added to the standard line of The DeVilbiss Co., Toledo, Ohio. Available with either ½ or ¼ h.p. motors, these fans are built for use with spray-finishing



equipment as well as for other exhaust purposes. They can be installed in a window, on wall or ceiling mountings, and meet the requirements of the Fire Insurance Underwriters. For complete information and prices, write the manufacturer.

Curved Radiator Hose Proving Popular Item

Thermoid curved radiator hose recently announced by the Thermoid Rubber Co., Trenton, N. J., has already attained widespread popularity among dealers, Thermoid reports. The chief reason is its convenience in making service installations. It is made in different sizes for specific models of Buick, Chevrolet, Chevrolet truck, Ford cars and trucks, Oldsmobile and Pontiac. A handy assortment of 12 different sizes is available through Thermoid distributors.



LIKE TO HEARUM
CASHBOX SING?
ALWAYS SELLUM
WAUSAU RINGS!

Do you keep the profit from re-ring jobs, or do complaints and adjustments take most of it. The profits from WAUSAU XX (flexibleXpander) PISTON RINGS are all yours. The way they tame the really tough oil pumpers-- and keep them tamed for an amazing number of miles--makes every customer a satisfied customer. Insist upon WAUSAU XX RINGS from your jobber or write The Wausau Motor Parts Co. manufacturers, Wausau, Wis.

WAUSAU MOTOR PARTS COMPANY WAUSAU, WISCONSIN

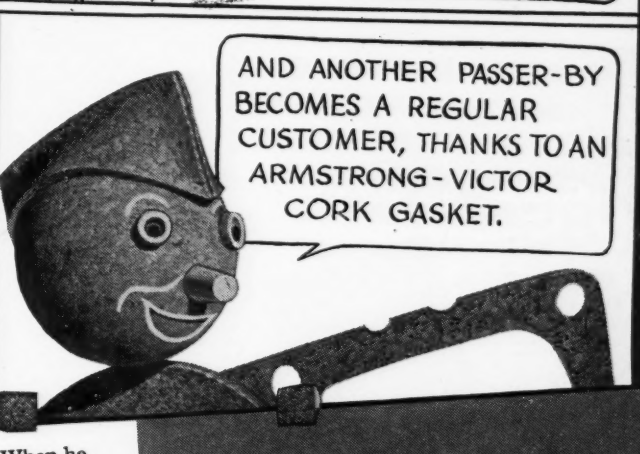
REPAIR SHOP ADVENTURES

of CORKY

How Corky and his eagle eye make customers of passers-by



LATER



KELLY wins a lot of profitable new customers this way. When he does a job, he guarantees it to be right. That's why he always uses Armstrong-Victor Cork Gaskets—the kind with the two-notch, double-guarantee trade-mark.

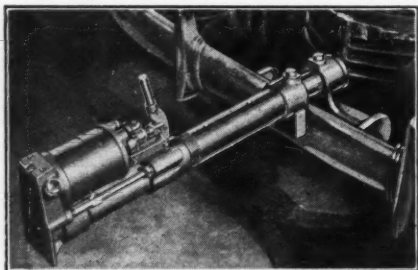
Armstrong-Victor Cork Gaskets are strong and durable. They prevent leakage because they are made from live, high-grade cork. They save your time because the bolt holes *always* line up.

Give your customers guaranteed gasket jobs. Order handy envelope sets for all popular cars from your Victor jobber today—and ask him for a free copy of the Victor Gasket List No. 27, which makes it easy to select Armstrong-Victor Cork Gaskets. Or write to Victor Manufacturing & Gasket Company, P. O. Box 1333, Chicago, Illinois.

Armstrong-Victor



CORK GASKETS AND HEADLAMP CORK



BAR STRAIGHTENING IS EASY JOB WITH **POWER PLUS**

Perfection Power Plus Hydraulic Jack—whether pushing in or pulling out—straightens bumper bars without their removal from the job. In fact, there's no removal from the job for body aligning, fender straightening, frame work, bumper straightening, knee action adjustment, steel running boards with the two modern hydraulic Perfection Power Plus units. Perfection Power Plus, the only double-acting PUSH-PULL hydraulic jack, gives you Speed, Power, Dependability, Accessibility, Adaptability.

G. A. C. MANUFACTURING CO.
ASHLAND, OHIO

New Stud Remover

The National Machine & Tool Co., Jackson, Mich., has developed a new stud remover especially designed for removing rusted or corroded studs from aluminum heads. It operates on



a new principle, and is said not to injure the threads. The new tool is particularly recommended by the manufacturer for use on Fords, Plymouths and Dodges, and is available in three sizes.

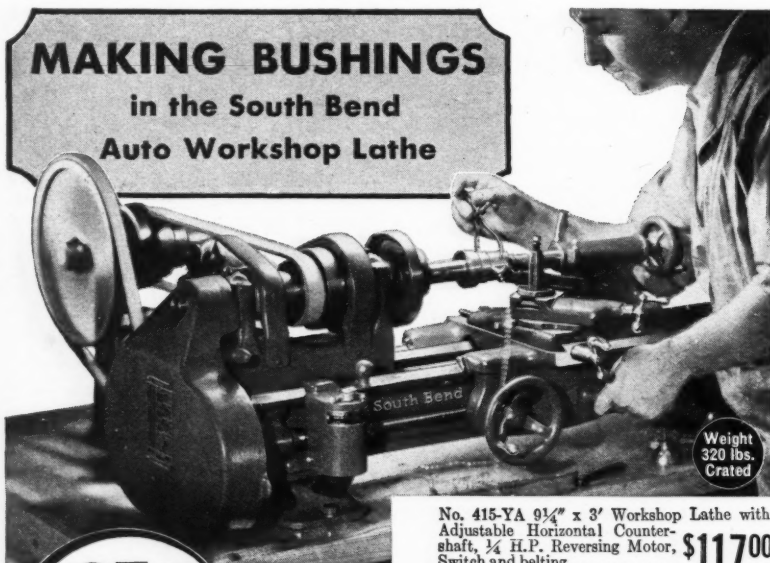
YOU NEED THIS LINE **LINKERT** PERFECT ENGINEERED PARTS FOR **CARBURETOR REPLACEMENTS**



CORRECT ASSORTMENTS FOR **CHEVROLET AND PLYMOUTH**

LANGSEKAMP-LINKERT CARBURETOR CO.
INDIANAPOLIS - INDIANA

MAKING BUSHINGS in the South Bend Auto Workshop Lathe



\$85.00

Less Motor Drive

Terms as Low as

\$6.00

a Month



No. 415-YA 9 1/4" x 3' Workshop Lathe with Adjustable Horizontal Counter-shaft, 1/4 H.P. Reversing Motor, Switch and belting. **\$117.00**

The South Bend 9-inch Auto Workshop back-gear, screw cutting, precision lathe is the most economical and useful tool for over 95% of the automotive work coming into the modern motor service shop. With attachments it will handle the six most important jobs—refacing valves—making bushings—finishing pistons—boring reabbitted connecting rods—cutting screw threads, and hundreds of other automotive and general machine operations. Cut your investment in shop equipment, and perform these jobs on this practical and profitable all-purpose lathe.

Use the coupon—Get the new auto service bulletin No. 33-G with full-page illustrations showing these jobs. Write for details on our liberal easy payment plan.

68 Sizes and Types of Lathes for every purpose

9" lathe prices start at \$ 85
11" lathe prices start at \$371
13" lathe prices start at \$448
15" lathe prices start at \$544
16" lathe prices start at \$642

South Bend Lathe Works

239 East Madison St.,
South Bend, Indiana, U.S.A.

Send the following Booklets Free, postpaid

- ☐ How To Make Bushings
- ☐ 9" Auto Workshop Lathe Bulletin
- ☐ Easy Payment Plan.

Size of lathe interested in

Name

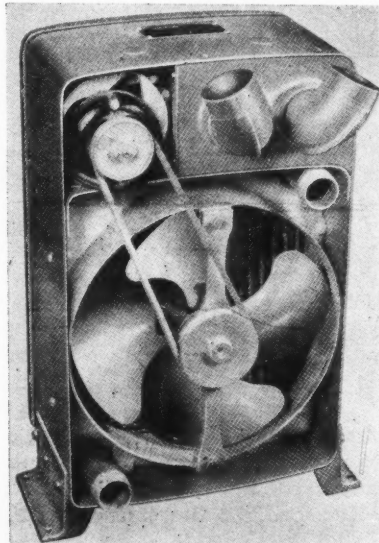
Address

City State

SOUTH BEND Precision LATHES

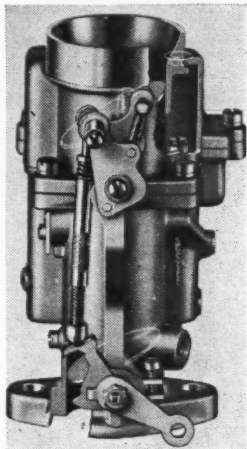
New Bus Heater

Designed to meet the more exacting requirements created by advanced bus design and higher standards of passenger comfort, the new Kysor H B Super-Performance Heater for 25 to 27 passenger buses has been announced by the Kysor Heater Co., Cadillac, Mich. With circulating water at 175 deg., the new heater is said to deliver 700 cu. ft. of air per minute to the coach, to driver's corner and to defroster outlets at 140 to 145 deg. Special outlets are provided to direct heated air to the driver's corner and to both halves of the windshield. The heater core is 5 in. deep, with a frontal area of 144 sq. in. Overall width of the heater is 13 in., and overall height 21 1/2 in. A GE 1/10 hp. motor is mounted at top right-hand corner of heater and belted to the fan. For complete information and prices, write the manufacturer.



Mallory Announces New Carburetor

The Mallory Electric Corp., Cloverdale & Fullerton Ave., Detroit, Mich., has announced a new carburetor of the mechanical air-valve type. It is a downdraft carburetor for Chevrolet and Plymouth installations. The new carburetor has only one discharge jet,

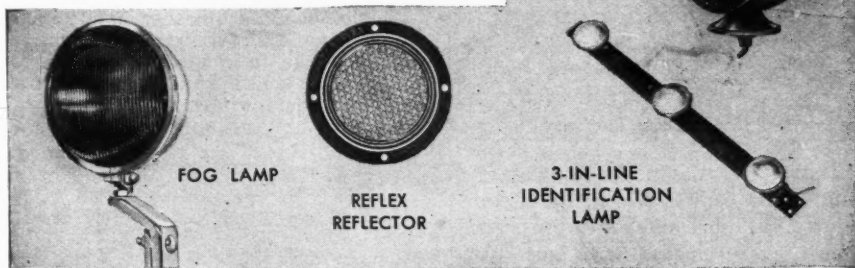


a single adjustment for idle and part-throttle speed ranges, with another adjustment for wide-open throttle or altitude compensation. The air valve is vacuum and mechanically operated, with the metering pin directly connected to the throttle, insuring positive action.

YANKEE LIGHTING* MEANS

SAFETY - ECONOMY - EFFICIENCY

Yankee has been manufacturing automobile lighting devices for over 23 years, and *guarantees* its products against mechanical defects. *Yankee manufactures all items of lighting equipment required by the I. C. C. Write for illustrated catalog "E" describing other Yankee truck lighting equipment.

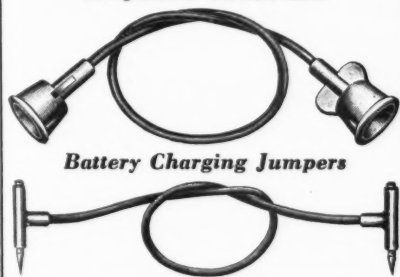


YANKEE METAL PRODUCTS CORP.
NORWALK, CONNECTICUT, U. S. A.

MUELLER UNIVERSAL BATTERY CLIPS



The Original and Only Complete Line
Recognized as the Best Made



Battery Carriers, Post Shims, etc.

Send for Free Samples
and Complete Catalog 706!

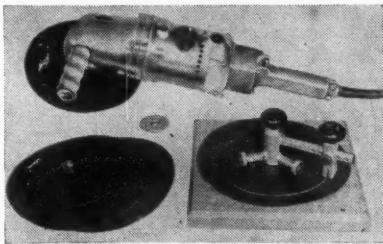
Mueller Electric Co.

Clip Makers for 30 Years

1590 E. 31st St., Cleveland, Ohio

Van Dorn Has New Electric Sander

A versatile two-speed sanding unit, adaptable to use with both 7 in. and 9 in. abrasive discs, has recently been announced by the Van Dorn Electric Tool Co., Towson, Md. A cutter is supplied for trimming the outer edge of a 9 in. disc where most of the wear



takes place, leaving a 7 in. disc that is practically unused. Two moulded pads, together with three 9 in. abrasive discs are supplied with each tool. A universal motor, operating on alternating or direct current, is standard equipment.

The Seal of Satisfaction BLOK-SEAL



NEW Liquid Metal Saves Time, Money and Effort

The old long and costly welding jobs are out. Blok-Seal, the new liquid metal, perfectly and permanently repairs cracked or porous heads, blocks, valve ports and water jackets. Entire operation requires less than an hour. Blok-Seal is designated for all types of water-cooled internal combustion motors. Sold only in sealed tamper-proof cans for your protection.

Blok-Seal Laboratories
CAMDEN, N. J.

CLASSIFIED ADVERTISING

INVENTORS . . . Protect your rights before disclosing your invention to anyone. Form "Evidence of Conception"; "Schedule of Government and Attorneys' fees" and instructions sent free. Lancaster, Allwine & Rommel
415 Bowen Building

Washington, D. C.

Motor Temperature Gauges Repaired—All Makes Automobile—Bus—Tractor—\$1.50—Marine \$2.75. Lines shortened or lengthened. All Work Guaranteed.

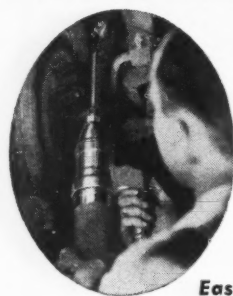
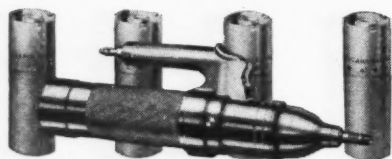
United Speedometer Repair Company, Inc.

436 West 57th Street

New York City

The HANDIEST of POWER GUNS

... at a cost every station can afford



ONE GUN
is a
COMPLETE
Lubrication
System

•
Fast
Powerful
Easy to Operate

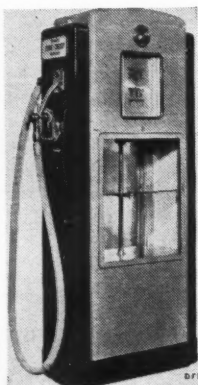
Ingenious adapters bring every fitting within easy reach. . . ONE gun handles ALL lubricants, with pressure to meet every need (cartridges are changed in a jiffy and quickly refilled from stock lubricants). . . That explains the instant success of the STANDIX POWER GUN. Ask your wholesaler—or write for details.

The Lubrication
Corporation
910 S. Michigan Ave.
Chicago, Illinois



Wayne Announces New Pump

The evolution of the motor service station gasoline pump into a practical combined meter and merchandising unit is smartly exemplified by the display-meter computing pump conceived and developed by the engineering department of the Wayne Pump Co., of Fort Wayne, Ind., and the design staff of Designers for Industry, Inc., Cleveland. The new pump is a harmonious unified mass with the computing register and display section in excellent proportion and nicely balanced in the buttressed streamline housing. The display case, uniformly lighted by concealed lamps provides about six square feet of display space.

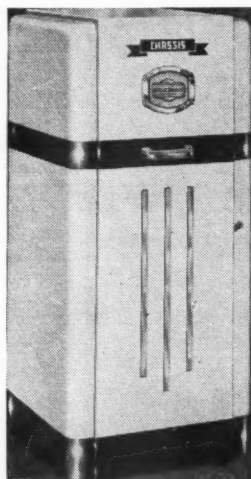


Cleans Chrome Parts

A new method for removing rust from chromium plated auto parts and protecting the chrome so it stays bright and shines is announced by the duPont Company, Wilmington, Del. This new development will be marketed by duPont in the form of a Chrome Refinishing Kit which contains a can of protective lacquer, a tube of a specially formulated paste cleaner, and a brush for applying the lacquer. The new chrome lacquer dries in 15 minutes, forming an invisible film which protects metal bumpers, radiator shells, hub caps, etc., against rust and corrosion caused by moisture, salt spray, fog and road chloride.

Modern Lubrication Equipment

The new Balcrank chassis "Lube-Liner" provides stylish, modern equipment for the lubrication department. Finished in white baked enamel with large chrome handles, the unit contains the pumping unit, hose and con-



trol handles completely concealed, and will handle any container up to and including 100 lb. sizes. The door shifts out of the way, making easy changing of containers possible. Equipped with concealed, noiseless ball bearing casters, making the unit readily portable.

Torrence Announces New Steam Cleaner Models

Two new sizes and fourteen new automotive and industrial steam cleaner models have been announced by The Torrence Cleaner Co., Border & Engracia Ave., Torrence, Calif. The models of interest to automobile dealers are the Model 300 which is recommended for dealers and service stations, and the Model 600, recommended for auto laundries and larger installations. Ordinary city water is mechanically impregnated with a powerful liquid cleaning compound, pumped to a compression chamber where it is heated and expanded to any desired operating pressure—from 40 to 140 lb.—and is then ejected through a restricted nozzle in an atomized stream of high velocity.

CLEAR PROFIT!

HANDY Battery Chargers operate at a lower cost, pay for themselves quickly, and then it's all Clear Profit. 2-yr. guarantee.

WRITE FOR BULLETIN \$29.50
BALDOR ELECTRIC CO.
4375 Duncan Ave., St. Louis



Handy BATTERY CHARGERS

FOR THAT PAINT JOB use a—



These lines represent available stripe widths

"EYE APPEAL MEANS BUY APPEAL"
An Approved Tool—for every Modern Paint Shop—Easy to use—Does better work—faster. Exclusive Features. Prices: sets \$1.50 to \$13.50.
Ask your Paint Jobber or write for literature.
WENDELL MFG. CO.
2533 N. Ashland Ave. CHICAGO, ILL.

HOOK ON

Repair Muffler Blow-outs in 15 Minutes

Heavy gauge, asbestos lined 1 1/2 inch "HOOK-ON" Muffler Shoes slip completely around rusted or blown-out section. Fit 4", 5" and 6" round muffler with wide over-lap. Beaded ends and formed clamps give perfect seal. Low cost, big profit.

For Fords we recommend patented No. 49 (over-all) Repair Jacket, covers complete muffler (telescopes to length, laps around). Looks like new muffler. Your jobber or direct.

3 No. 50 Universal Shoes \$3.60 (net dealer cost).
3 No. 49 Ford Over-All Jackets \$5.40 (net dealer cost). Shipped postpaid if check accompanies order.

SPRING SPECIALTY CO.
7 N. 8th Ave., Maywood, Ill.

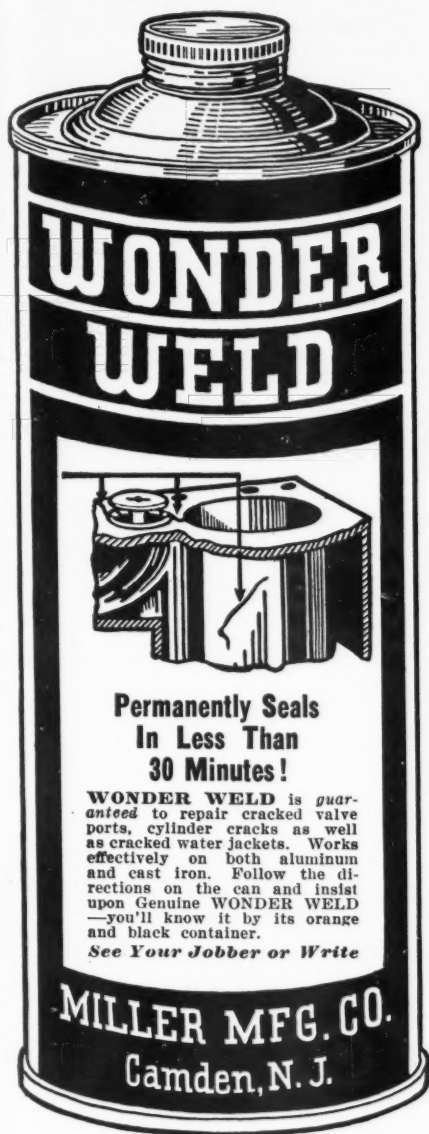
U.S. PAT. NO. 2,107,588

Lubricates Rubber Shackles

A non-petroleum lubricant for use as an anti-squeak for all rubber parts and metal-to-metal contacts on the chassis of an automobile has been developed in the research laboratories of E. I. duPont de Nemours & Co., Wilmington, Del. The new product, known as "Orel," is not for use where it will come in contact with car body finishes or lubrication fittings.

Lock Prevents Gas Theft

Seal-O-Gas-Lock, a new device for preventing the theft of gasoline from syphoning it out of the gas tank, has been announced by Safe-Way Products, Inc., Union Trust Bldg., Cleveland, Ohio. It is inserted in the filler neck several inches below the regular gas tank cap, and locked in place with an ordinary screw driver. List price \$.50.

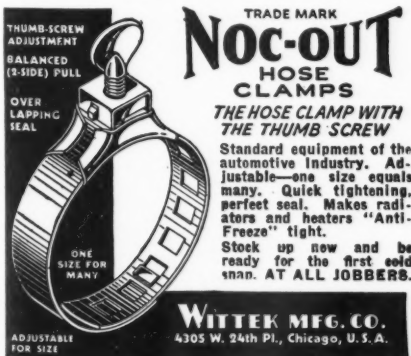


**We are telling
40,000,000 MOTORISTS:
EVEREADY PRESTONE**

TRADE-MARKS

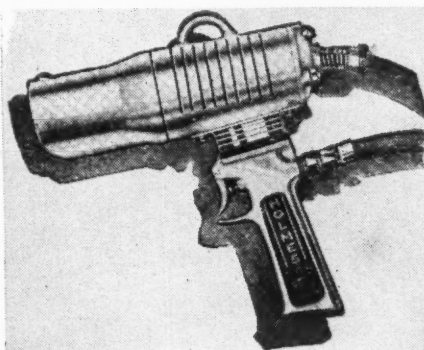
ANTI-FREEZE

**Costs More by the Gallon...
LESS by the Winter
WILL YOU CASH IN?**



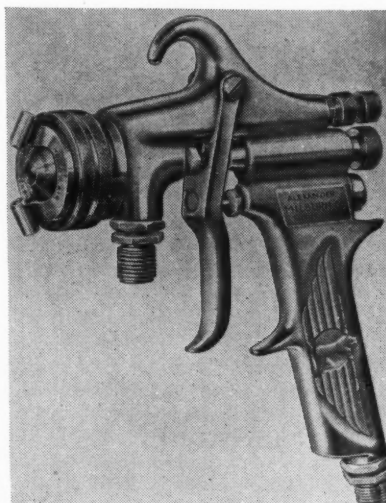
Metal Spray Gun Has New Heater Element

The new Holmes Taywel metal spray gun made by the Ernest Holmes Co., 2505 East 43rd St., Chattanooga, Tenn., is equipped with a new thermostatic heating element which is claimed to automatically control and regulate the flow of current into the gun, thus maintaining the exact spraying temperature for perfect performance. The manufacturer states that the new gun is capable of spraying solder continuously without the slightest danger of overheating. The heating and thermostatic units are both inclosed in the gun to protect them from shop damage. The air and solder nozzles are located in the recess of the nose, thus affording protection and at the same time making it easy to blow them out by diverting the air stream upward. Efficient insulation keeps the handle comfortably cool during operation. Supplied complete with tinning compound and spraying solder—list price \$42.50.



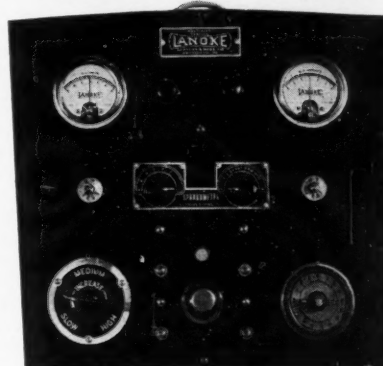
Spray Gun Has New Nozzle

A new paint spray gun, known as Model OM, has been announced by The Alexander Milburn Co., Baltimore, Md. The outstanding feature of this new gun is the integral fluid nozzle and cap. The nozzle is furnished in two styles, standard siphon or pressure feed and mushroom type



pressure feed; both made of special steel. The gun is equipped with a replaceable thread baffle ring assembly which eliminates the necessity of replacing the entire gun body or spray head when threads have become worn.

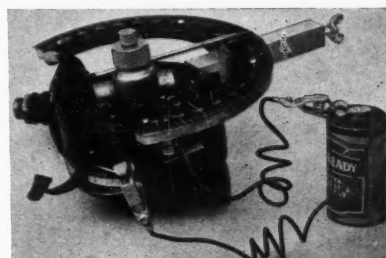
LANOKE



Model No. 107 Portable Motor Analyzer

ACCURACY for the asking

Get the right answer the first time with the LANOKE MOTOR ANALYZER—accurate to 2%. Offers precision testing on battery voltage, voltage losses in line, voltage regulators, generator output, distributor breaker mechanism, distributor cap and rotor, high tension wires, spark plugs, valves, rings, starting motors, coils, condensers. A real asset for your service department.



Model No. 130 (Universal) Cam Angle Protractor

PRECISION with every move

The LANOKE CAM ANGLE PROTRACTOR is an inexpensive device to properly set contact points and to accurately synchronize distributors. Will take the "buck" and "skip" out of V-8 and the "ping" out of other motors. Sets cam angle with precision of distributor test machines costing ten to twenty times more. There is no handier tool for any service department.

Know the carburetor mixture, fuel pump suction and pressure, muffler back pressure, and acceleration charge instantly with the LANOKE MASTER FUEL ANALYZER. Will pay for itself.

LANOKE CONDENSER AND CIRCUIT TESTER gives every condenser test, including capacity, breakdown, leakage and series resistance. An absolute necessity in any service department.

Let the LANOKE FUEL PUMP AND BACK PRESSURE TESTER help determine the condition of fuel pump, air cleaners and muffler back pressure. Adaptable to any motor.

No service department can afford to be without the LANOKE CONTACT ALIGNING TOOL for distributor work. Does every job quickly and accurately without destroying the proper cam angle.

Manufactured by
LANAGAN & HOKE, INC.
1638 W. HUNTING PARK AVE.
PHILADELPHIA, PA.

LANOKE



● Made only of the best materials . . . by the most modern methods . . . Gardiner Acid-Core Solder assures uniform high quality results on every job. Its quick acting flux permits fast, clean work. Unusually high tensile strength insures lasting bonds.

Produced by modern methods exclusive with this company, Gardiner Solder costs less than "nameless" solders that lack its consistent performance and dependable results. No wonder car manufacturers, body builders, garages and repair shops everywhere standardize on Gardiner year after year.

For maximum satisfaction and economy in Acid and Rosin Core Solders in various alloys and core sizes . . . body, bar and wire solders, or special solders to meet any special requirement . . . specify Gardiner-made products. They're dependable . . . ALWAYS.



PACKED IN
1, 5, AND
20-LB. SPOOLS



4839 S. Campbell Ave., Chicago, Ill.

WELD-TITE

GENUINE

THE PIONEER MOTOR WELD

U. S. PATENT MAY 27, 1933



REPAIRS CRACKED CYLINDERS, VALVE SEATS & WATER JACKETS PERMANENTLY.
MADE IN LIQUID AND POWDER FORM.

ALSO MFGS. OF IRON CEMENT, RAD. SEAL, RUST REMOVER, RAD. CLEANER, CARBON AND RUST SOLVENT

ALL PRODUCTS GUARANTEED 100%
WELD-TITE MFG. CO. CAMDEN, N. J.



BORING BAR

Fly Cutter Type

St. Louis SUPERIOR

Mirror Finish — Ready for Piston

Installation

Precise — Built for Lifetime Accuracy

Three models with boring range of 2.2" to 5 1/2". Made by specialists in boring bar manufacture — approved by leading car and truck manufacturers.

ST. LOUIS TOOL CO.

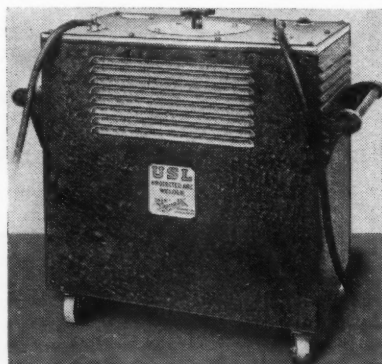
2315 N. 5th St., St. Louis, Mo.



"Well! Hurry and make up your mind! Can you vulcanize my girdle or not?"

Owen-Dyneto Has New Electric Arc Welder

A new alternating current welding machine is being placed on the market by the Owen-Dyneto Corp., Syracuse, N. Y. Features of this new welder are said to insure the highest possible efficiency and wide range of application. It is designed to connect to any standard voltage or frequency power line, is rated at 150 amperes and has



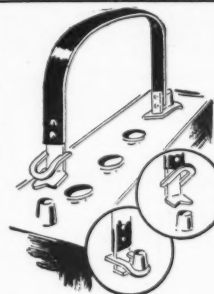
a range from 30 amperes to 280 amperes output, maintaining 20 to 30 volts across the arc. It is intended to fill the demand for a quality alternating welder that would meet the most grueling service requirements over a long period of life and still be within the range of popular price. For complete information and prices, write the manufacturer.

Pin Hole Honing is Cheaper and Better than Reaming

● Never a dull tool or blade-marked hole; small investment; nothing to sharpen; no guess-work or inaccurate fits. Low cost replacement Abrasives; Micrometer Adjustment. Makes ANY mechanic an expert pin fitter. Ask your Jobber today for Standard or Heavy Duty Pin Hone Set you need.

3-TOOL SET \$26

HALL PISTON PIN HONE



"CAN'T SLIP" BATTERY CARRIER No. 545 35c.

Automatic jaws grab terminal posts regardless of wear. Acid-resisting. Fits all batteries including new end-to-end type. NATIONAL MACHINE & TOOL CO., Jackson, Mich.

TOLEDO

VALVES • GUIDES • SPRINGS • KEYS
SEAT INSERTS • WATER PUMP PARTS
CHASSIS BOLTS AND BUSHINGS
TRYON SHACKLES
SILENT "U" SHACKLES
HARRIS SHACKLE BUSHINGS
ECCENTRIC TIE RODS • PISTONS
CHROME-PLATED PISTON PINS
Write for Catalogs

The Toledo Steel Products Co.
3304 SUMMIT STREET
TOLEDO, OHIO, U. S. A.



POWERFUL—DEEP-TONED FAR REACHING

A Horn so Good it makes a Salesman out of every customer.
Prices as low as \$7.50 for Horn Only.
Literature available on New Motor Controlled Fog or Driving Light.

BUELL MANUFACTURING COMPANY
2983 Cottage Grove Ave., Chicago, Ill.

THIS TRADE MARK IS YOUR GUARANTEE

Always
DEPENDABLE



Demand
QUALITY

AUTOMOTIVE PRODUCTS

Write for the Most Complete Catalog Ever Issued

LION AUTO PARTS & MFG. CO., Inc. CHICAGO, ILL. DALLAS, TEXAS